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Glasgow has been the centre of all the pharmaceutical activity of the past month. The British Pharmaceutical Conference, under the Presidency of Professor Redwood, met there on September 5 and 6, and the members were most hospitably entertained by the local chemists. We give an extended report of the proceedings.

In point of numbers in attendance it appears from the visitors' book that Glasgow has made a dead heat with London, the record of these two cities being each 175 names. This compares with 119 at Bristol last year, 105 at Bradford in 1873, 140 at Brighton, 115 at Edinburgh, 160 at Liverpool, and so on. The attendance throughout the meetings was much more general at Glasgow than has been the case on any previous occasion.

The opportunity of getting so many chemists and druggists together was taken advantage of to push the Trade Association on another stage, and at a meeting held on the 8th inst., in Glasgow, excellent progress was reported, and the association was definitely organised. A paid secretary is now appointed, an excellent committee formed, solicitors, bankers, and auditors elected, Professor Atfield is named analytical referee, and over 1,200 members are enrolled. The Scottish members will probably form a branch society in union with the general association. A considerable increase of funds was also reported by the treasurer.

In consequence of the meetings at Glasgow, at which more than half the members of the Pharmaceutical Council were present, a quorum was not formed for the September meeting of Council, and there are, therefore, no deliberations of theirs to report.

Some alarm was lately created by a statement in the daily papers that some druggists had been fined in Glasgow on an

Excise prosecution for selling Liebig's extract of meat. The article sold was that prepared by Messrs. Digby, Gandy & Co. under the name of liquid extract of beef. It was stated by the prosecution to contain 84 per cent. of Tarragona wine, and no appreciable quantity of quinine or extract of meat, which were declared to be prominent ingredients. Mr. Davison, who was first prosecuted, pleaded guilty to having sold foreign wine without a license, though it was stated by his counsel that he had sold it in the belief that it was a proprietary medicine, and that it had been ordered by medical men. The bench had no alternative but to impose the mitigated penalty of 12l. 10s. A similar fine was imposed on Mr. Heathwood at the same time, while five other cases, Messrs. Currie, Macconochie, Macdonald, Frazer, and Greig, were adjourned. We learn that since the decision the excise authorities have agreed to compromise all the cases, the defendants to pay 2l. 10s. each. Another case, in Hamilton, near Glasgow, has also been withdrawn on the same terms.

The German Apotheker-Verein was held in Stuttgart on September 4, 5, and 6. The American Pharmaceutical Association was to commence its session on September 12.

The French pharmaciens held their fourteenth congress at Clermont-Ferrand on August 17, 18, and 19. About 60 delegates and others from Paris and from the various provincial associations met in form, but the local pharmaciens, almost to a man, held aloof. The chief work of the session was the organisation of a general association of French pharmaciens, which is to hold its annual meetings in Paris, and which is to establish a benevolent fund. There was some little difficulty to squeeze this third society between the congress and the Protective Society of Pharmaciens of the Seine already in existence, but the love of officialism ultimately conquered.

Mr. John Armitage, druggist, of Dukinfield, committed suicide on Sunday evening, September 3, by taking prussic acid. The jury found that he died from an overdose of prussic acid, taken while in an unsound state of mind.

The twentieth year of the Social Science Congress is announced to be held in Liverpool, from October 11 to October 18, under the presidency of the Marquis of Huntly.

The World's Homœopathic Convention, for which the homœopaths of Philadelphia had made most earnest preparations, was held in that city on June 26. The report of it has only lately reached us. When we mention that two German and four English doctors were the only European visitors it will be seen that the œcumenical character of the convention was not quite all that might have been hoped for. The English representatives were Dr. Hughes, of Brighton, Drs. Haywood and Skinner, of Liverpool, and Dr. Clifton, of Northampton. It is intended to hold a second similar convention in London in 1881.

The length of our report of the Glasgow meetings prevents the insertion of much other matter in this number. We shall, however, be able to publish an interesting variety of subjects in our next issue.

CORNER FOR STUDENTS.

The opportunity which we offered our correspondents for the exercise of their essay-writing abilities has been more fully utilised than we ever expected; indeed, we have received so many essays that we could not possibly do them justice in the short space of time which we allowed ourselves for the examination of the papers, so that we are obliged to defer the awarding of the prize until next month. Several students express their satisfaction at the change from analytical work to essay writing, and wish to have occasional opportunities of a similar nature. The wish shall certainly be complied with, so far as we find the system consistent with the utility of this

department. In the meantime we return to the analytical exercises. The subject of the next exercise will be, as hitherto, one of the substances of the Pharmacopœia. It is to be submitted to a qualitative analysis, the name of the substance ascertained, and a report made as to its purity. Students who wish to compete should send us their names and addresses before the 20th inst. On the 25th we shall forward samples of the substance for examination. Students' papers will be received up to October 15.

Pharmacalia.

To err is human: the best among us are liable to make mistakes sometimes. Last month Mr. Reynolds was described as the first chosen President of the Trade Conference. So he was in one sense, but we are willing to stand in the largest proof-sheet and confess the incorrectness of the statement. The wish was father to the thought, and we were led into inaccuracy by reasoning on the fitness of things. Nevertheless, honour to whom honour is due; Mr. Samuel Urwick Jones has been selected for the office by the association. Should he succeed the world will declare that his endeavours have been wise and prudent; should he fail, the same world will say—I told you so.

If there be any gall and bitterness in our constitution, let Mr. Reynolds know that we pour both on his defenceless head, and an eighth vial, were there such a thing revealed, for having forced us to make this correction.

One would have thought that the Council, who have been more than respectfully addressed, would have smiled on the new organisation with the sunshine of their approval, and have welcomed loyal assistance.

Some have, however, smelt treason in the proffered aid, and interpreted help from outside into a vote of censure on their own proceedings. It seems to us that the clergy might as well resent lay agency in the extension of the Establishment; and that it would be a parallel case of misapprehension were the great railway companies to tremble for their reputation because the Messrs. Smith had set up book-stalls on the line.

The paramount duty of the Council is to conserve and extend to the uttermost the corporate existence of the Pharmaceutical Society—to make its membership an honourable position—to develop its educational system—to proclaim with unfaltering voice the double necessity of the highest standard of qualification in those dispensing medicines, and absolute purity of drugs. It is also the duty of the Council to watch over the interests of a library and a museum, to maintain with jealous care the efficiency of our examinations, and to be mindful in the midst of prosperity of the fatherless and the widow.

In furtherance of this mission the Council has never yet been found wanting.

It is strange that a section of our advisers should supply cold water to their own supporters who are willing to do service with regard to outlying trade matters of protection and defence, which the Council feel either beyond their scope or hesitate to undertake. Meanwhile, the Chemists' and Druggists' Trade Association will go on—an independent, not a rival body, and Mr. Hampson must spell his surname with an S.

We find we are growing eloquent, and we stop at once, for oratory is out of place except at Bloomsbury Square.

* *

Whilst the seniors are busied with Trade interests, it is clear that the juniors are not exterminating themselves by an interest in trade. No one can read the advertising columns of current pharmaceutical literature, contained in either circular or journal, without seeing the unfortunate position to which masters are reduced. Many shepherds want their sheep, and the "agony column" is daily on the increase. Be it remembered

that at this particular juncture a *Times* advertisement for a clerk's situation in the city is answered before 10 o'clock next morning by not less than two hundred personal applications. The remark is not sensational, nor is it made at random.

Whether the confinement in a druggists' shop is too great and the salary too small, or whether the higher culture now in vogue has led to a disgust with business, we are not prepared to say. In vain is offered a comfortable home, no Sunday duty, salary, with dinner and tea, and special hours for study; in vain is the assistant asked to state his height and send his *carte-de-visite*; in vain is a member of a Christian church preferred and sobriety commended: the response, if we may judge by repeated invitations, is of the feeblest character, the recalcitrants are not forthcoming, and the appeal is disregarded.

Seeking for a solution to the enigma, we have arrived at some conclusions open entirely to correction, for we do not pretend to be omniscient. We should be false to the readers of this journal did we hesitate to affirm our own conviction that to have received a certain amount of liberal education, at least sufficient to read Latin with facility, and write fair English composition; to have climbed the higher branches of the study of botany and chemistry, so as to enjoy the discussions of the Linnean and Chemical Societies, and thus be brought in contact with men themselves distinguished in either science; to be able successfully to perform analyses and contribute scientific papers, pharmacological, botanical, or otherwise, *has* a tendency to lead young men away from a druggists' counter. To such, the professor's chair or the tutor's office is more attractive than a prosaic situation; while the gain to be possibly reaped by chemistry applied to commercial purposes, or class teaching, is a bracing stimulus which has its due effect.

Superadded (and in our judgment the strongest argument of all) is a keen sense of appreciation of a higher resulting social position.

Another cause may be traced to the eagerness with which young men with small capital begin business on their own account. They do not perceive that a familiarity with the discipline and details of the retail trade is as essential to their well-being as the possession of scientific knowledge.

For want of trade preparation many are sorely hampered, for chemistry can throw no light on invoices, nor help to keep the books, nor please a customer, nor give instruction in the minor arts of commerce.

A third explanation, present in some minds, and once proclaimed at Glasgow, that the dread of examination thins the number of available assistants, is repugnant to our notion of the dignity of British Pharmacy. The more the ranks of incompetency are thinned the better, and there will be room left for the intelligent and deserving. Masters are well rid of uneducated assistants, and the latter are sharp enough to see that their trade interests run parallel with their attainments; and that examinations are the barriers erected between themselves and an army of pretenders.

* *

Let us shift the scene and relate what has taken place at Rouen. On Wednesday, August 23, a three-masted steamer, called *Le Frigorifique*, was moored at the bottom of the Rue Jeanne d'Arc, just in front of the Cours Böeldieu. An immense crowd on both banks of the Seine waited for the arrival of Admiral Paris, Frémy, Bouley, Milne-Edwards, delegates from the Académie des Sciences, and other notables, to witness the ceremony of the benediction of the vessel. Thither came a detachment of the 39th Line and the band; thither also General Merle, with a brigade of infantry; lastly, S. E. Monseigneur de Bonnechose, Archbishop of the city, in full canonicals. About 4 o'clock the solemnities were over, and in the evening guests, journalists, and ladies *de la haute société rouennaise* assisted at a banquet to do honour to M. Tellier, the inventor

of a freezing ship, which is to convey meat from La Plata to the shores of France.

In the stern of the vessel is a first chamber of frigorific machinery for introducing cold into five reservoirs, containing each twenty-three gallons of methylic ether. This ether, which is gaseous at so low a temperature, is condensed under steam pressure in cast-iron receivers, where after a short time it liquefies, and goes to cool again an indefinite number of times the cylinders full of water which are in the hold destined for the meat. The water which receives this current of intense cold is not frozen, for it contains calcium chloride.

Curious is the appearance presented by the space reserved for the machinery, the pipes being covered with hoar-frost; in the hold, which literally may be called the frozen deep, reigns a Siberian winter, and he who would penetrate that Arctic zone must fold himself in a many-folded cloak, so as to equalise the difference of temperature existing between the lower and upper regions. The sides of the vessel are composed of two frames in wood, separated from each other by cork, and covered by two wrappers, one in felt, the other in iron.

The frigidarium is destined to contain the flesh of five hundred oxen, and is above eighty feet long, crossed throughout its whole length by a grill of iron bars. The thermometer (C.) marks five or six degrees below zero, and may be reduced still further. The commercial bearing of the enterprise is thus estimated from a French point of view, our information being drawn from a Rouen journalist reporting on the spot. Meat, that is, beef, in Paris is worth one franc a pound, and two sous (one penny) at La Plata. Should the experiment succeed, meat may be delivered on the French coast at five-pence a pound. On a small experimental scale meat has thus been perfectly preserved for three months. Ten persons have been sent to La Plata, whose business it will be to organise the details of the undertaking. It is in contemplation to buy a large tract of ground as a dépôt for the herds of oxen brought thither from the interior, and a capacious frigidarium will be built in which to store the meat until the moment of its shipment.

Various schemes, it need not be stated, have already been tried on a large industrial scale for preserving and cheapening meat: Liebig has had many extracts from his original proposal—there have been concentrations, coatings, and solutions, and recently there have been suspicions of port wine.

It would be hazardous to accept entirely the eulogium pronounced on the new venture by Frémy, of the Academy, or the Baron Gaussard de Mayolle; nevertheless a reasonable expectation of success may be entertained. *Le Frigorifique* has commenced her ethereal voyage, and heartily we wish the barque good speed.

* * *

One of the most hopeful signs of progress made by individual British pharmacists is the fact that the learned societies draw a fair proportion of members from our ranks. Many amongst us have emerged from a narrow circle, and claim fellowship with purely scientific inquirers. We are disposed, not in a spirit of vainglory, to rate the standing of English examined chemists and druggists as high as their companions on the Continent, excepting the one deficiency manifest in original research. There we are still second to the German and French pharmacien. There is scarcely an official of the Conference just held at Glasgow, or a contributor of a paper to its programme, whose titular qualifications have not exceeded the requirements of the Pharmacy Act. Titles in themselves are empty things, but they are not empty when they are the outward and visible signs of a successful love of science. The microscope begins to attract much more attention than is generally supposed. We are not alluding to the known public advance of microscopy (hideous substantive) as shown in books and the transactions of various associations, but to the quiet cultivation of this

branch of observation behind many a counter and in unpretentious pharmacies. Our heart goes with these unassuming workers, who find delight and certainty, and we hope commercial profit, in the revelations of the instrument.

Carpenter, Lionel Beale, Jabez Hogg, and others, have advanced and popularised the study of the microscope by their treatises, at once lucid in description and intensely practical; while cheap apparatus has brought it within the reach of a very moderate income. Mr. Thomas Greenish may be congratulated on his frequent contributions to the literature of the subject, and on the manner in which he has set himself to introduce the value of the microscope to the notice of the retail druggist. He is of opinion *that no pharmacy is complete without one*, and thus paraphrases Mr. Lamplough's appeal in behalf of his Pyretic Salts, "have it in your houses."

No one is better aware than Mr. Greenish that it is one thing to have a microscope and another to know how to look down it, else the investigator may not only see visions, but dream dreams.

A curiosity in the world of science used to be the Microscopical Soirée at King's College, where ladies, temporarily forsaking the flowery paths of dissipation, worried themselves with immersion apertures and diatoms. How they were singed with the fierce light that beats about an object-glass; how they retired winking and with a headache, from the strain of gazing under difficulties at spectrum apparatus and surface structures, has been considerably remembered by the Fellows, who of late have tried to restrict their annual exhibition to those to whom it may be of service.

The recent communication of Mr. Greenish is on arrowroot, and it deserves a place in the Pharmacalia of the month. The term appears to be derived from a native Indian word, *ara-ruta*, designating a farinaceous substance, and not originally limited to the starch obtained from Maranta. The writer wishes for the introduction in published official documents of a less vague designation than the word arrowroot. He proposes to use the word *starch* in a generic sense to indicate the organised structure observed, and its source added to mark the particular kind. That a more definite nomenclature should be adopted may be judged by the following instance. A tradesman was summoned for selling adulterated arrowroot, stated by the analyst to have been mixed with tapioca and starch. The sample proved to be the starch of a *maranta* with a mixture of that of cassava. "Tapioca," remarks Mr. Greenish, "is a granulated article, and not likely to be used as an adulterant, and arrowroot is itself a starch."

A paper of extreme interest will be found in the September number of the *Microscopical Journal*: it is on "Micro-Photography, applied to the Micrometry of Blood," by Dr. Woodward. The author insists on the caution that should be exercised in criminal cases in pronouncing on supposed identification of the dried corpuscles of human blood; and urges that hereafter the most trustworthy expert testimony in such cases will be that which is corroborated by photographic evidence.

* * *

September 6, 1876. No meeting of the Council. We hasten to allay all anxiety upon the subject. Mr. Bremridge has been heard of since, and was in his usual health. Our esteemed Secretary was found straying in a remote Northern locality, where he enlarged before a Scottish audience on the duty and the beauty of marriage at a registrar's office.

Paulo majora canamus. Willingly would we sing of the festivities and the science of the Glasgow celebration of the British Pharmaceutical Conference, but fate has otherwise decreed, and our information is gleaned from the sources which are open to the general reader.

Yet we know the city well, with its splendid industries and its large-hearted hospitality. Not unknown to us, either, are the

glories of the Clyde, or—that which strikes every Southerner—the obvious solid prosperity of its citizens. Though our lot is cast remote from crowded streets, where nature wears her fairest aspect and where men are few, in spirit we can join with those who so lately met together under the presidency of Professor Redwood, and more than ever, in comparative seclusion, we recognise the truth that as iron sharpeneth iron, so a man sharpeneth the countenance of his friend.

The address opened with a careful exposition of the relative position existing between medicine and pharmacy, the mutual aid which each might render, and the difficulties which fringe the boundary line of medical advice. The legitimate subjects of research and study were shown to be pharmacy and materia medica, and hopeful conclusions might be drawn respecting advance in this direction from successful efforts that had been already made. Evidences of recent pharmaceutical progress were enumerated, first among which was the search for alkaloids in drugs of vegetable origin. Ergot of rye, ipecacuanha, fox-glove, scammony, and poppy capsules, were illustrations, reference being made to the aconite investigations of Mr. Groves. However keen has been this branch of inquiry, chemistry “has nevertheless proved powerless to produce the alkaloids, with perhaps a single exception.” We have a right clue to their constitution as compound ammonias, but there our knowledge stops, and the further exploration of this tempting field of investigation is still open to some fortunate discoverer. The remarks on antiseptics and disinfectants will be read with interest, as well as the brief paragraph on the construction of a standard Pharmacopœia.

The claims of pharmacists to be consulted in its compilation date from the era when pharmacy itself was established on a scientific basis. The Professor ended with a suggestion that the Conference might appoint committees, “not for original research, but for the practical testing and comparing of results which have been already obtained in the investigation of subjects relating to the preparation of medicines.”

After the Address came the papers, twenty-eight in all. After the papers came the sailing to the west. That unpleasantly early bird, the *Eagle*, lay at her moorings at 6 o'clock A.M., and left them about seven, the band playing, probably, “Hail! Smiling Morn.” Between the Presidential message and this matutinal flight came the supper at the Royal Hotel. There was no toast-drinking, but the toast provided by the English speakers was hot decidedly, and certainly not buttered. Mr. Groves observed, “He must say he was pained to see the vast number of spurious pharmacists preying upon the vitals of true pharmacy, and injuring the prospects of those whom he saw before him. Such a condition of affairs stood in the way of that advancement which the Conference was intended to promote.”

Let our Glasgow brethren manfully accept words honestly, and not unkindly, spoken. Not a syllable uttered at the supper should affect the motto of the Conference—*Concordia soll ihr Name seyn*.

THE INTERNATIONAL EXHIBITION AT PHILADELPHIA.

(BY OUR SPECIAL CORRESPONDENT.)

THE American manufacturers of fine chemicals have certainly succeeded in producing the finest display that has ever been seen in the country. Not only are the specimens themselves rare and beautiful in form, but the cases which contain them are of the most elaborate, not to say extravagant, character, one of the firms spending as much as 10,000

dollars on their case alone, which would be large enough to use as a moderate-sized dwelling-house when shorn of its contents.

The largest exhibit is that of the well-known firm of Powers & Weightman, of Philadelphia. In arranging this exhibit the intention has been to show the crude article and the manufactures from it in connection.

Two or three hundred pounds of opium enclosed in a wire netting is placed by the side of a pyramid about four feet in height and two in width, composed of cakes of sulphate morphia.

Serons of cinchona bark form the panels in the base, over which is placed a square glass case filled with sulphate quinia.

The barks shown are of *Cinchona succirubra*, *Cinchona officinalis* (New Valley), cut from the British Government plantations in India, and the samples exhibited to the Prince of Wales on his recent visit to Madras are also to be seen. The box enclosing the latter is made from the wood of the cinchona tree.

The East India crown bark (*Cinchona officinalis*) was obtained from trees propagated by the British Government among the Neilgherry Hills on the south-west coast of India; the East India red bark, the *Cinchona succirubra*, from the cinchona plantations of Rungbi, near Darjeeling (Brit. Sikkim), India, established by the British Government.

Sulphate of quinia in large quantities is also shown, and sulphate of cinchonidia, which is now coming largely into use in the United States as a substitute for sulph. quinia, it being found by practical experience to be as efficient in somewhat larger doses.

An elegant specimen of bisulphate quinia is shown, this being used for making pills, its greater solubility than the ordinary sulphate giving it a great advantage when employed in this form of medicine. Indeed, it is surprising that this salt is not exclusively used.

Many other salts of quinia are shown, acetate, arseniate, bromide, citrate, ferro-cyanide, hospital quinine (unbleached), hypophosphite, iodide, muriate, oxalate and tannate, quinia and its salts (the sulphate and bisulphate), cinchonidia and its salts (sulphate and bisulphate). The alum shown by this firm, which occupies a central position, is excelled in appearance by several other makes. Blue vitriol is a specialty with this house, and its adaptability for the purposes of exhibition have been largely taken advantage of.

Citric acid is beautifully shown in rather a novel way: two sheets of glass enclosed in Gothic-shaped walnut frames are joined together in such a way as to leave a space of an inch or two between them. Selected crystals of citric acid are dropped down between the plates, and when the chink is filled the whole is sealed and then placed before a window as a transparency.

This firm are the sole manufacturers of this acid in the United States. The source from whence they obtain it is Sicilian, Mexican, Florida and Jamaica lime juice. Strong efforts are being made by them to encourage the production of sour orange and lemon juice in Florida. Tartaric acid is exhibited crystallised in an inverted crown-shaped mass, and presents quite an imposing appearance.

The iron scale preparations (which have suffered from heat and exposure), citrate, ammonio-citrate, ammonia citrate with quinia, pyrophosphate, &c., brilliantly set off the more modest-looking iodides and bromides. Over 300 specimens altogether are shown, particular prominence being given to iodide and bromide of potassium, the latter salt of surprising cheapness when compared with prices paid ten years ago, when it was all imported. It is now largely exported, due to the fact of the discovery of bromine in the salt wells of West Virginia and Ohio, and the immense production, over 200,000 lbs. annually, has greatly lowered its cost.

The gem of this firm's collection is unquestionably the hemispherical cake of caffeine exhibited, the circular crystals of this specimen shooting out from various nuclei in stellate tufts of marvellous beauty.

Rosengarten & Sons, of Philadelphia, have their case arranged on the same avenue, just south of Powers and Weightman's: the articles are not displayed in such quantities as by the former, but in quality their products are excelled by none.

A large and handsome case of walnut and plate-glass encloses their goods, and we noticed, as particularly fine, their purified acetate lead, crystallised strychnia, subsulphate of iron, muriate of quinia, crystallised nitrate of bismuth, sulphocarbonate of soda, cinchona barks, Pitayo, red Ceylon, East India calisaya, sulphates of quinia and morphia, nitrate silver, iron scale

preparations. The bismuth salts of this house are noted for their purity and freedom from contaminating metals.

Chas. Pfizer & Co., of New York, have secured rather an unfortunate position for their goods, being as far away from the other manufacturers of the same class of goods as they could well get.

They have thirty-four specimens exhibited in round-topped glass shades. They showed resublimed iodine, iodoform, corrosive sublimate, yellow santonine, (which by the way is a very poor chemical to show at an exhibition, for if put into ordinary glass it soon becomes discoloured by the action of the light, and, to use a Hibernianism, if seen through a dark glass you might as well not look at it), Rochelle salt, permanganate of potassa, piperine, refined borax, refined camphor, iodide and bromide of potassium. These are all enclosed in a neat case, and are creditable specimens, judged by appearance.

Chas. S. White & Co., of New York, although one of the smallest exhibitors in this line, have shown as much genuine taste in arranging their display as any firm in the whole building. We see a beautifully-finished ebony case ornamented with narrow gold stripings; the inside pyramidal stand of shelves, and the inside back of the case, first padded, then lined with blue satin, and this tufted and upholstered. The bottles, of course, carefully filled with their selected chemicals, stand out in bold relief on this delicate background.

Their great specialty is strychnia, which they show in the form of a cross, which has been dipped into a strong solution and crystals allowed to form on it. They put subnitrate of bismuth into the market in drops, "à la Française." Their valerianate of quinia is a beautiful specimen, and it may not be known to all members of the profession that this salt, when rubbed between the fingers or in a dry mortar in the dark, will emit light. They have also an interesting specimen of kelp, used for making the iodine in their case.

The manufacturing pharmaceutical chemists are also in full force. Hance Brothers & White, of Philadelphia, have the finest specimen of monobromated camphor in the whole exhibition. This chemical has obtained considerable favour among practitioners on this side of the water, and seems to be employed quite extensively. The sample alluded to weighs 38 lbs., and, covered with plate-glass, forms a medallion or centre-piece. They have also a fine display of what have been called "eclectic alkaloids;" they are sometimes termed resinoids, and are usually made by one general formula—that of making a concentrated alcoholic liquid extract and pouring it into water. Podophyllin is the type, and the Eclectics have a host of these so-called active principles, many of them inert, of course, for only those are useful of which the activity resides in the resinous matter of the plant, which is not the rule, but generally the exception. This firm confine their manufactures of this class to the active ones. They have a very showy specimen of sulphate of berberina, and of aloin a fine sample. Sugar-coated pills of the United States Pharmacopœia are extensively made, and care is taken to keep them as soft and soluble as possible. There is also a full line of official and non-official fluid extracts, syrups, &c. Fluid extracts are used enormously here, and surprise is expressed that Europeans do not use them to any extent. They are certainly very convenient, by reducing bulk, and in many cases for making syrups, tinctures, &c.

Bullock & Crenshaw, of Philadelphia, one of the first firms to make sugar-coated pills, have a large glass show-case filled with them. It is quite amusing to stand alongside this exhibit a few moments, and hear the mournful experiences rehearsed by the gaping throng, as they call off from the labels the names of the various kinds of pills which they have taken.

Mackeown, Bower Ellis & Co., Philadelphia, show fluid extracts, effervescing salts, lozenges, extracts, &c.

Robert Shoemaker & Co., Philadelphia, have a general assortment of selected powders and preparations.

Twining & Scheidt, Philadelphia, show fluid extracts, sugar-coated pills, lozenges, &c.

John Wyeth & Bro., Philadelphia, have suppositories, compressed pills, elixirs, wines, &c.

Compressed pills are used to some extent here now. They are made by introducing the proper quantity of the article dry into a cylinder, having a die at the base, and driving a piston—which has a die on the lower end to correspond—upon the powder. The result is a hard lenticular-shaped pill, which may or may not dissolve in the stomach. Where the substance used is very soluble they answer very well, but this process should never be used for substances of slow or doubtful solubility, for

its tendency is, on account of the great pressure used, to diminish solubility largely. The idea originated years ago with William Brockedon, of England, as all readers of THE CHEMIST AND DRUGGIST well know.

Jacob Dnnton, of Philadelphia, has a smaller display of compressed pills to show.

Frederick Stearns, of Detroit, has a very tasteful exhibit of fluid extracts, elixirs, powders, lozenges, granulated salts, sugar-coated pills, tinctures, syrups, &c. He shows litmus paper dignified by the euphonious term "Charta Exploratoria."

Billings, Clapp & Co., of Boston, have a large display of pharmaceutical chemicals.

William R. Warner & Co., Philadelphia, show sugar-coated pills in immense variety, and exhibit in a prominent place their Vienna medal for this class of goods.

McKesson & Robbins, of New York, have a very small display considering the amount of business which this firm are reputed to do. The drugs are exhibited in ordinary 8-oz. bottles, and fall behind in quality compared with many other specimens. They are pushing the sale of gelatine-coated pills, which they claim to be superior to any other kind of coating, but the great majority of the trade are not ready to believe gelatine more soluble than sugar, and hence their success is but limited. In this case is to be seen some fluid extracts, elixirs, &c.

William Tinsser & Co., of New York, agents for salicylic acid under Professor Kölbe's patent, have a good assortment of the various forms of this now valuable commodity to show.

Before closing this letter I want to note several points which have been omitted in writing up the British section.

J. J. Hicks, of Hatton Garden, shows in this case Crookes' radiometers, and they are most skilfully and delicately made; an atmometer for measuring evaporation, electric alarm, thermometer, patent clinical thermometer.

Dallmeyer, of London, has some elegant binocular microscopes.

Negretti & Zambra have the most beautiful and complete display of barometers and thermometers in the exhibition. They show a Negretti thermometer, with gridiron form of bulb, used by James Glaisher, Esq., F.R.S., in balloon experiments; it is a masterpiece in glass blowing, and is the most sensitive thermometer probably ever constructed. This firm show, also, hygrometers, maximum and minimum thermometers, in great variety.

Edmund Wheeler's microscopic objects (48 Tollington Road, London) have been universally admired.

R. & J. Beck, London, have a fine display of their large best binocular and monocular instruments, which are highly appreciated here.

Henry Crouch has sixteen microscopes of various styles and sizes, neatly shown.

Ross & Co., of London, have, however, the largest and most attractive display of all—twenty-six microscopes, from his best to his simplest students'.

Lynch & Co., in druggists' sundries, have cut-glass pungents, chest protectors (not appreciated at temperature 90°), tooth brushes, spatulas, Wedgwood mortars and pestles, funnels, and seals for stamping wax on corks. These seals are unquestionably the finest ever seen here for the purpose mentioned; we cannot get the seal makers in this country to cut into the metal deeply enough, so as to bring the impression on the wax out in high relief.

G. B. Kent & Co., London, have brushes as their specialty. As curiosities they show tooth brushes of George III.'s time; tooth brushes as made for the Emperor of Austria, Napoleon III., and Queen Victoria; hair brushes, nail brushes, cloth brushes, &c.

S. Perks & Co., cultivators and distillers of lavender, Hitchin, have a fragrant exhibit: their Mount Pleasant lavender field looks as if it would be more inviting than the conventional "bed of roses."

In pottery, Great Britain's exhibit is unexcelled.

The glass ware shown by the Aire & Calder Glass Bottle Company and Kilner Brothers, King's Cross, London, is excelled by the American, not only in finish, but also in the quality of the glass.

Before this letter is published the American Pharmaceutical Association will have held its 24th annual meeting in Philadelphia, and at the hour of writing the prospects are that it will be the most largely attended of any that have ever been held. For this Centennial meeting ample preparations have been made, and there is no doubt of its success.

SEVEN WEEKS IN CENTENNIAL LAND.

ON a certain Thursday afternoon in the month of April of this present year an "unattached" chemist and druggist found himself on the landing stage at Liverpool, about to embark on one of the leviathan boats, which form the Atlantic ferry for the "land of the free." Safely back in Albion our tourist has scribbled notes of what he saw, thought, and experienced, and although American sketches are by no means a crying want of the present day, we find sufficient freshness in this one, written from a druggist's point of view, to give it print.—ED. C. & D.

Why I should have opted for the good ship *Britannic* rather than any other I know not. She being quoted as a crack steamer, the latest triumph in construction, size, speed, &c., and not being dearer than any other "first-class" liner, were the probable temptations. Away we go in a spiteful little tug piled all over with those large yellow "trunks" in which the Transatlantic tourist delights. First, second, third, and fourth class passengers, we are all huddled together in the scanty space on the tug's deck. I see around me my fellow-prisoners for the next ten days; their physiognomies betray a varied range of emotions—the nervousness of the inexperienced traveller finds itself juxtaposed with the *insouciance* of the *blasé* tourist, who is sure to find time to tell an admiring group that "he thinks nothing of it; this is his eightieth trip—just as comfortable on one of these ships as he is in his own house in Chicago." Very re-assuring all this, but personally I confess to some emotion on making my first sea voyage and leaving home for a brief stay in a foreign country.

Now we are alongside the placid monster, which lies in the stream in a lazy, dreamy way, as if she was anchored there in perpetuity. We struggle up a ladder, thread our way to the "first cabin," ask one of many hurried stewards the whereabouts of state room 67, find it, deposit our bags, sticks, umbrellas, parcels, &c., admire the contracted but convenient quarters, notice a certain smell of "on board," think of a restorative we did not forget to provide ourselves with, take a small dose, and then go on deck just in time to see the tug boat casting off. The captain and first officer, resplendent in their uniforms, take their places on the bridge with the pilot by their side, and then an impressive stroke of the gong signals the engineer to start, and the screw makes the first of the million revolutions which are to carry the ship to New York.

Majestically she moves down the Mersey under the ægis of the national buntings of England and America and the White Star Line's own flag. Good-bye, Liverpool! at the Bell-Buoy. We are in the Channel; our big ship gets relatively smaller; there's a fresh breeze; we don our heavy coats and tie a string to our hats; she begins to dance just a little, then more, and the scene is changed from the quiet spring afternoon at Liverpool to the wild waves and deepening night. We see the mountains of Wales; then it gets dark, the cabins are lighted up; we wander around, now on deck, now down in our state room, now in the cabin; everybody meets everybody else on the cabin stairway, no one is satisfied anywhere. The first twenty-four hours seem an eternity; we are always wondering what next. We find the officers on the bridge have changed their uniforms for rough pea jackets, and we think it won't be very nice to-night. Then the steward walks round with his cabalistic "Supper, sir;" the old travellers rush off to the table, and the new ones mildly insinuate that "they don't feel hungry." Weary and nervous, to bed at last we go—these are the "extra large berths" which we read about in the prospectuses. We sleep; yes, just a little, wake up and go to sleep twenty times. The weather is fairly good, as we feel no emotions. A pale gleam of daylight which filters through the thick glass disc in the side of the ship announces early morn: we get up, try to wash, balancing ourselves with our legs wide apart to neutralise the rocking; go on deck, which we find untenanted except by an early straggler or two like ourselves; sit down and look at the water—water, nothing but water; yes, there is a strip of land visible; it is Ireland—green Ireland—we shall see the *green* in an hour or two.

Breakfast arrives, and one is astonished to find all the choice seats taken up, but not occupied. The experienced traveller has left his card upon a plate at the captain's table, and has even posted it to the steward a day or two before sailing, with the promise of a *douceur*; the laggards have taken places at the first officer's, the surgeon's, and the purser's tables: the show of

handsome crockery and silverware with the name of the ship blazoned thereon is superb. Our numbers are thin at our first breakfast. During the forenoon we plough along within sight of Erin, and shortly after lunch we enter Queenstown harbour to take from a brilliant red-painted tender the latest mails and passengers, *via* Holyhead and Dublin. This is speedily accomplished, and away we go down the coast, the air filled with sea gulls and other aquatic birds. A lively dinner, at which, the weather being good, the greater number of our passengers appeared; a smoke on deck, and then to sleep perchance; and the second morning we are positively at sea, plunging out bravely for the New World at a pace of fourteen knots an hour, all sail set, full steam up, and the ship going splendidly. This is a delightful moment of the voyage, standing on the promenade deck, well wrapped up, and taking in the invigorating sea air by full respirations.

I pass over the next few days, the incidents of which were too monotonous to be worth mentioning in detail: suffice it to say that I gradually came to be on speaking terms with several of my fellow-passengers, among whom a majority were Americans. Unconsciously I floated into a knowledge of those Classic games "Euchre" and "Poker," assuaging my thirst and consoling myself for my defeats in the congenial brandy smash due to the inventive genius of our kinsmen. At intervals the narrator of the company regaled us with detailed accounts of all the disasters at sea for the last half century. As a relief from this, we were blessed with the company of an individual who drew the long bow to a fearful extent, behind the smoke stack, in consideration of sundry Havannahs obligingly offered by eager listeners. The young gentleman who did the recitation business in the cabin of an evening, flanked with two plated candlesticks, made himself known at an early period of the voyage, and a second-hand Dundreary was greatly in vogue at dessert with something about "Sam." That highly serious looking party over there, who was always reading and writing, was ascertained to be a celebrated professor, and was finally strategised into delivering a lecture on the "Depths of the Sea and its Wonders." A careful scrutiny of the passenger list led to the discovery of a reverend gentleman, who was duly solicited and as duly felt it his duty to accept a general invitation to hold divine service and preach on Sunday. The young lady passengers did not wait long to be handed to the piano in the saloon, and Madame Angot was massacred over and over again, while some adolescent tenor warbled the latest fashionable *morceaux*.

The usual blows, fine weather, and fog succeeded each other; the captain's dinner was announced and given, land sighted, and on a bright Sunday morning, eight days after quitting Queenstown, we found ourselves running along the coast of Long Island, and soon we were abreast of Sandy Hook, the entrance to the magnificent bay of New York—the Empire City. Our American pilot having come on board, we go rapidly up the bay by a tortuous route—on our right the verdant shores of Long Island, on our left the sandy beach of New Jersey. We reach Staten Island, and pass the "Narrows," flanked on either side with immense forts; then we enter the upper bay; hundreds of large ships and steamers are at anchor; we see the confluence of the North and East rivers, with Manhattan Island at the intersection; we pass several small islands, on one of which the much talked of colossal statue of "Liberty giving Light to the World" is to be erected by the French. Here we are in the upper bay—ships, warehouses, docks in all directions; the magnificent Hudson, more than a mile in width, right before us, and branching off to the right the narrower East River. We fire a salute, the officers don their uniforms. All New York knows a steamer is coming up; the quays and shipping are covered with idlers and curious people. We rush down to our cabin, gather together our worldly goods, bid our fellow-passengers *au revoir*, go ashore under an immense shed built on the wharf, with plank floor, and now we tread the soil of America.

A clear blue sky, a bright glaring light, almost painful to my eyes, accustomed to a more sombre tone—a bracing atmosphere, long rows of red brick warehouses and dwellings, dirty streets, innumerable tramways, and, as guided by a friendly hand I approached the more central districts of the city, long rows of brown-stone houses, with an occasional one of pressed brick or white marble. The business streets wonderfully modern; real palaces of commerce in iron painted white and in pure white marble, but the label "to let" disagreeably frequent, indicating the depression in business so general for a year or two past. The dulness visible in the streets is in consequence of the

sacred day being observed with the same strictness as in England.

Being installed at a very good medium-priced hotel in the business quarter at eight shillings per diem, everything included, we sallied out for a Sunday afternoon walk. There is a fine large brown-stone Gothic church, in the midst of an old cemetery, called Trinity, a parish which dates from Queen Anne's time, and the richest church corporation in America, having received a grant of land on Manhattan Island, which she still owns, worth millions to-day, being the very centre of New York. Trinity's wealth is unknown. This is Wall Street, the stockbrokers', bankers', and insurance men's purlieus. On it are the United States Treasury and the Custom House. Up Broadway we go, and remark the splendid granite and marble palaces of the life and fire insurance companies. Here is old St. Paul's church; opposite is the *New York Herald* office; then the "Astor House," most ancient of the race of great hotels; then the new city post office, the finest public building and newest; the old City Hall; and in view are the immense structures of the *New York Tribune* and the *Times*. And now we are at Chambey, and this immense white marble block, remarkable for its chaste, elegant and massive simplicity, is the late A. T. Stewart's wholesale "store." Half a mile further through "Broadway," very much the same width as Oxford Street, and we see the St. Nicholas Hotel on the one hand and the Metropolitan on the other, and a little farther up the Grand Central—all seething with travellers and residents. Hundreds of people are standing about in these hotels, all smoking and spitting on the white marble floors, ignoring almost entirely those little conveniences which are so abundant, denominated spittoons. Continuing our stroll, we reach Stewart's colossal iron and glass warehouse denominated his "upper store" and retail department, and then that most fashionable of churches, Gothic in marble, Grace Church. Through a region of stylish shops, among which I noticed several most elegant chemists' establishments, we come to Union Square, on the right of which is the equestrian statue of George Washington, and on the left a figure of Abraham Lincoln. Further on, two miles from our starting point, we reach Madison Square, the very heart of the fashionable quarter, traversed by the famous "Fifth" and Madison Avenues, and with several of the grand hotels around it and in its immediate neighbourhood. There is the Fifth Avenue Hotel, and the Hoffmann, the Gilsey, and several others. The principal corner shop in each of these hotels is a "drug store," with fittings and a stock of goods which leave far in the rear, I must admit, our best London establishments. There are in a radius of half a mile of this quarter a dozen first-class establishments, whose annual rent varies from six hundred to twelve hundred pounds per annum, while their general expenses are enormous. English, French, and American specialties, perfumeries, soaps, brushes, and toilet articles are kept in stock in the utmost profusion, and shown up by the arrangement of cases, &c., to great advantage. Draught soda and mineral waters also constitute a large source of revenue, and the minor shops in less fashionable neighbourhoods do a lively trade in summer in "Wahoo beer," which strikes me as being an improvement on our ginger beer. The city of New York, with the adjoining cities, which are, in point of fact, a part of it, although separated by the river, and under other municipal governments, contains nearly two millions of inhabitants. There are about fifty wholesale drug houses, and at least a thousand retail establishments. Most of the latter are fairly flourishing, notwithstanding the general stagnation of business. There is, however, certainly no room for imported talent at this time: the supply of assistants already at hand is quite ample, and it is evident that only under most exceptional circumstances could any one from England hope to obtain a desirable position. Any great revival of activity in trade would enhance the chances of chemists' assistants from abroad very materially, especially in the western cities, where the superior pharmaceutical education of English clerks would be calculated to strengthen their chances in establishments able and willing to pay much better salaries than at home. In conversation the prevailing depression appears to be treated rather lightly; it seems to be regarded as a temporary affair. "We shall be all right again soon," is heard on every hand; everyone has the most unbounded confidence in the irrepressibility of the people and business of the country, and looking to the magnificent crops on every hand, annually increasing and selling readily for money, the wonder is how such a state of things as is at present existing could ever be experienced. It is rather

the large mercantile and financial houses that would seem to be suffering: the retail trade appears to be in a safe position, and very few failures occur among them. A very large interest in New York is the manufacture of paints, ground in oil, of which the consumption throughout the States is enormous, owing to so many of the buildings in the country being built of wood. There are several very extensive white lead companies and manufacturers of colours; also a number of mills for crushing linseed and castor beans; large works for the production of acids, ammonias, &c.; but for the finer medicinal chemicals Philadelphia is decidedly the principal city. My wanderings as a sight-seer, and also among the trade in Getham, having continued for several days, I took the rail to the city of Brotherly Love, some ninety miles distant, traversing the fruitful State of New Jersey. This most rectangularly laid-out of towns, it is needless to say, I found in a perfect ferment of Centennial excitement. Normally a dull town for such a large one, it owes to the Exposition whatever of cosmopolitan movement may at this time exist. Its two great chemical manufacturing houses, Messrs. Powers & Weightman and Messrs. Rosengarten & Sons, make splendid exhibits of the products of their extensive laboratories, while many other firms have come to the front with a very handsome show of the chemical and pharmaceutical products for which Philadelphia stands pre-eminent among commercial towns in the States. Fatigued with all the bustle and crowd in the streets and at the Exposition, I was only too glad to escape and push farther west, taking in my route the famous oil country on the confines of Lake Erie. Less than twenty years since petroleum was practically unknown in the United States as an article of commerce, whilst at present it ranks third in importance and value among the exportable products of the United States, following cotton and grain. The shipments from Philadelphia alone average since the commencement of the year a million of gallons per week. The most remarkable feature of the oil business is that its production is confined to a comparatively small territory in the three States of Pennsylvania, Ohio, and West Virginia. The total area does not exceed probably ten thousand square miles, whereas the cotton and wheat products are distributed over half a million, or thereabouts. On this theory, oil territory is more valuable than either. Much of the old bustle, I was told, in the oil country, has subsided now that the boring and pumping has assumed the character of a legitimate business, and the fever of speculation has subsided. Once we read of excited crowds rushing to this country, which was in a semi-savage state, and there, destitute of the ordinary comforts of life, submitting to physical hardships in the then sparsely-settled country, in the hope of amassing a sudden fortune by some lucky *coup*. Now towns have arisen, comfortable hotels and houses have been erected; those civilising influences, churches, school houses, and, last but not least, women and domestic life, have appeared upon the scene, and capital controls the vast operations in this region. Transporting the crude oil in barrels over muddy roads to the nearest river landing, lake port, or railway station, has given way to the simple and comparatively inexpensive process of running the oil through tubes from the wells to the petroleum trains upon which are erected the huge vats in which it finds its way to the refineries at Weehawen and Hunter's Point, New York, and to the shipping wharfs at Philadelphia.

Pushing on a hundred miles or so, I reach a noted lake port, Buffalo by name, within an hour of which is the great cataract Niagara. This ocean of water interminably pours over the fearful precipice with a never-ending and deafening roar. Were the overflow of the great western lakes to cease we should have a rocky chasm at its foot one thousand feet deep; but it does not cease, and there is not the slightest symptom of Niagara drying up. On to Chicago I go, passing over the river by the Suspension Bridge about half a mile below the Falls, across the State of Michigan, a strip of Indiana, into Illinois, where at the foot of Lake Michigan is the famous commercial centre, Chicago. Here is found an audacity of architecture of a surprising nature; a business movement and initiative out-stripping any other city of the American continent. Pharmacy, both wholesale and retail, flourishes here on a grand scale, and the best shops vie with, if they do not surpass, those of the Atlantic cities. Still there is a vast unemployed population, and things might be better. Southward turn I my wanderings, traversing almost the entire length of the great grain-growing State of Illinois, and near the intersection of the Ohio and Mississippi is the great entrepôt of the valley of the latter river, St. Louis,

destined in the opinion of many to outstrip even Chicago, in time, in the race of commercial greatness. The drug and pharmaceutical trade, though extensively carried on here, has not received so great an impetus as in less remote western cities. St. Louis is, however, a great mart for supplying the frontier districts farther west, and the distribution of medicines is a most important branch of the commerce of the city, leaving out of question the cereals and pork trade. Eastward, up the river Ohio, Louisville, a large and flourishing city, and then Cincinnati, came in my route. The latter especially is a substantial business city, ranking nearly in the magnitude of its transactions with Chicago and St. Louis. Further on Pittsburg is reached, the Sheffield of the States; and then I take a through ticket for the national capital, Washington. This is as little of a commercial town as possible: governmental and political business dominates, and out of the season when Congress sits it is as dull as can be—a magnificently sketched out city, the public buildings grand and imposing, but many spaces everywhere require building up. A night train whirled me through to New York, and after two or three days' rest in the metropolis I turned my face northward, by one of the "floating palaces" plying between New York and Albany on the Hudson River. Every mile we traverse is bordered by historic country, first of Indian, then of Dutch, then of British, and finally of American times. The towns, rivers, lakes, and mountains bear Indian and Dutch cognomens. We pass the splendid Palisades, reach the picturesque sinuosities near West Point, and finally, in the upper waters, come upon the blue Catskill Hills, and then arrive at Albany, the capital of the State of New York, and the eastern terminus of the great canal which unites Lake Erie at Buffalo with tide water. A couple of hours more and we are at Saratoga, the American Baden-Baden, whose saline waters are so widely known in the States and to some extent in Europe. This is a favourite resort of the New York merchant princes and their families during the hot weather, and for gigantic hotels with flirtation piazzas is unequalled anywhere. The two best known waters are the Congress and Empire, both of which are bottled on a great scale and sent to every part of the Union. *En route* for Boston, my port of embarkation for home, I traversed the Old Bay State (Massachusetts), that mother of so many of the greater ones out west. On this inhospitable rocky soil have flourished and still continue to do so a thrifty population of over a million, claiming, and with much reason, to be the brain of the American Union, and proud of their busy capital of English aspect, mockingly called the "Hub," but more seriously Boston. After a few days repose my return trip was entered upon, and under the flag of a staunch Cunarder I duly and safely completed a most instructive and entertaining tour in the United States.

SOLUTION OF SALICYLIC ACID.

AS reported in the *American Journal of Pharmacy*, July, 1876, p. 305, Mr. C. L. Mitchell read a paper at a pharmaceutical meeting on June 20, 1876, in which he recommends a formula for obtaining a concentrated solution of salicylic acid. The formula is as follows:—

Acid salicylic, pur., 5ij.
Sodii biborat., 5j.
Glycerine, q.s.

Mix the acid and borax with f5iv. glycerine, heat gently until dissolved, then add q.s. glycerine to make the measure f5j. This solution contains 25 per cent. salicylic acid, and can be diluted with either glycerine, alcohol, or water, to any degree desired. The author says that the advantages of a concentrated solution of this description can scarcely be over-estimated, as it affords a very agreeable mode of both prescribing and dispensing salicylic acid. So far, good; but is not the modifying effect of borax and glycerine on the therapeutic action of salicylic acid to be taken into account?

Apropos of this subject, Charles Becker writes in the same journal (p. 306, *et seq.*):—"Borax in the proportion of two parts to one of salicylic acid and fifty of water precipitates slightly after twenty-four hours; a solution of one part each of salicylic acid and borax in five parts of glycerine and twenty-five of water is permanent; while the same proportion of borax, acid and glycerine in fifty parts of water will precipitate after twenty-four hours. A solution of one part of acid to two of borax in twelve parts of glycerine, made with heat, is permanent; but when one part of this solution is diluted with three parts of water a cloudiness appears in three hours."

LONDON BANKRUPTCY COURT.

McCulloch & Perrin, Chemical Merchants, 9 Mincing Lane. This failure has been already noticed in *THE CHEMIST AND DRUGGIST*. The bankrupts, Henry Thomas McCulloch and Henry Perrin, trading in co-partnership under the firm of McCulloch & Co., presented a petition for liquidation of their affairs out of court about three months since, and at a meeting of creditors, held on June 7, a composition of 3s. 4d. in the pound was accepted, payable in two equal instalments on July 7 and August 7 respectively. Default was, however, made in payment of the first instalment, and adjudication of bankruptcy ensued on August 1 upon the petition of Mr. G. Boor, wholesale druggist, Artillery Lane, the act of bankruptcy being a declaration on the part of the bankrupts of their inability to pay their debts. The first meeting under the bankruptcy took place on August 16, before Mr. Registrar Keene. No statement of affairs was filed, but the accounts rendered under the liquidation proceedings disclosed unsecured debts to the amount of 10,222*l.* 7s. 10*d.*; and debts for which security is held, 940*l.*; against assets, 1,060*l.* 0s. 5*d.* Several creditors proved, and the proceedings resulted in the appointment of Mr. F. B. Smart, accountant, 85 Cheapside, as trustee, together with the following committee of inspection:—Mr. J. J. Jessop, 43 Mincing Lane; Mr. George Boor, Artillery Lane; and Mr. W. T. Scott, of Marshgate Lane, Stratford. Mr. J. Rae, 9 Mincing Lane, is the solicitor acting under the bankruptcy.

HENRY TURNER, Homœopathic Chemist and Publisher,
77 Fleet Street.

THE debtor, carrying on business as Henry Turner & Co., has presented a petition for liquidation, and Mr. E. C. Willis applied to the Court on September 2 for the appointment of a receiver of the estate, and for an interim order staying further proceedings at the suit of certain creditors. The debtor, in his affidavit, stated that his assets if fairly realised ought to produce about 6,000*l.*, in which case there would be sufficient to pay the creditors 10s. in the pound. He had executed a bill of sale in favour of Mr. Attwater, to whom about 1,500*l.* was now due, but it was important that the stock, which consisted of homœopathic medicines and books, should not be realised by means of a forced sale, as in that case a considerable loss would probably accrue. Mr. Tibbetts, accountant, 14 Coleman Street, was nominated to the office of receiver. Mr. Registrar Murray made the appointment, and granted an interim injunction. On September 9 Mr. Lucas applied on behalf of the receiver and debtor for the continuance of the injunction. He stated that the debtor's business was a peculiar one, namely, that of a homœopathic chemist and publisher of homœopathic works. It was very desirable that Mr. Attwater, the bill of sale creditor, should not enforce his security, as considerable loss might result from a forced sale. Mr. Doria, interposing, said that he appeared for Mr. Attwater, who had taken possession before the petition. His Honour, referring to the case of *Jacobson v. Ricketts*, lately before the Court of Appeal, said he understood that the Lords Justices drew a distinction between an execution creditor and a bill of sale holder, their lordships observing that in the latter case the convenience of the general body of creditors ought to be consulted. Mr. Doria said that Mr. Attwater had not the slightest intention to proceed to a forced sale, and he repudiated any such suggestion. In fact, he was prepared to give an undertaking not to proceed under his bill of sale until four days after the meeting of creditors. His Honour thought that such an undertaking would be quite sufficient, but continued the injunction so far as it related to the other actions. The question of Mr. Attwater's costs would be reserved.

We have received a new edition of Lynch's "Illustrated Catalogue of Druggists' Sundries, Shop Fittings, Surgical Instruments, &c." It is revised up to August.

The Chemists' Trade Association.

GENERAL MEETING.

ROYAL HOTEL, GLASGOW, SEPTEMBER 8, 1876.

THE chair was taken by the President, Mr. S. U. Jones, at 10.30 A.M. About 60 or 70 gentlemen were present.

The PRESIDENT introduced the business in a short speech. You are aware, he said, that at a meeting held recently at Birmingham a Chemists' and Druggists' Association had been formed. The want of such an association had been long felt in England. We have not combined for purposes of aggression, but for defence. Our business is a much more anxious one than in former times—we have to handle more active remedies. And we feel that with the many anxieties which are necessarily incident to our business we ought not to be burdened with unnecessary ones. We merely seek to protect and advance our own interests. Having formed this association in England we thought it would be selfish not to offer its advantages to our brethren in Scotland. It is for you to judge whether it will be desirable for you to join us. We think it would be. We seek not merely your silver and gold, but more than that, your moral support, and we wish to act together as one man in the furtherance of our common interest.

Several letters were read from friends in England and Scotland regretting their inability to be present.

The Hon. Secretary (Mr. Holdsworth) read the report, of which the following is an abstract:—

I have to report that in compliance with the request of the Birmingham Conference I forwarded on July 13 to the secretary of the Pharmaceutical Society the following resolution:—

"That this Conference of chemists and druggists urge upon the Pharmaceutical Society the necessity of testing the legality of co-operative traders selling and dispensing poisons."

Which was duly acknowledged in a letter dated July 14.

A subsequent letter from the secretary of the Pharmaceutical Society, dated August 4, stated that the resolution had been submitted to the council at its last meeting, and referred to the Law and Parliamentary Committee for consideration.

The general circular has been issued to every chemist and druggist on the register, and the result has been most gratifying. At the close of the Conference there were 377 members enrolled, and at this time there are upwards of 1,200 on the books, 150 of which are London chemists.

The amount of donations promised has risen from 260*l.* at the close of the Conference to upwards of 620*l.*

The Secretary (Mr. W. F. Haydon) read the treasurer's report:—

At the close of the Birmingham Conference about 260*l.* had been promised in donations. This included a number of subscribers of sums larger than 5*l.* In order to obtain the difference in donations I issued a circular to these gentlemen to allow the difference in the amounts to be placed as donations to the funds: the result was in nearly every case a ready compliance with my request.

Mr. Churchill kindly undertook to see the proprietors of the London wholesale houses, and the result of his one day's canvass was most satisfactory, showing that these gentlemen only need the matter to be brought prominently before them to secure their hearty support.

The general circular, issued on the 24th ult., has proved financially a great success, as from the day it was issued till this time some 450*l.* has been added to our funds, and every post continues to bring accessions of members and money.

Mr. REYNOLDS said this was essentially a business meeting. It was not the less interesting on that account. All were agreed as to the necessity of such an association as this. All were exposed to the same dangers. Each year seemed to bring some new encroachment on our trade. This visit to Scotland occurred at a specially suitable moment, when we found our brethren here perturbed by an excise prosecution. This case was an admirable illustration of the usefulness of such an association as that just formed. The attack on the trade in this affair seemed to be a grossly unfair one. The prosecution had given no notice to the retailers that they must discontinue the sale of this liquid extract of meat. The course they had taken allowed the persons who were the real source of the complaint to get off scot-free, while parties who were only innocently concerned in the transaction suffered all the annoyance and loss. It would be the duty of their trade association to at least

consider what the best course to pursue under such circumstances would be, and an organised society could do this more effectually than could the individual attacked. A person seized with sudden illness was not generally the most capable of judging what was the best remedy in such an emergency. The advice of a friend might often be of extreme value in such a case; and so in this instance. It might be that a plea of guilty was not the most advisable course to take under the circumstances. Government servants were as sensitive as ourselves, and if they expected to be met with a bold front they would be more cautious in promoting prosecutions, lest they should be met with a snub instead of promotion from their superiors, who were not interested in risking a defeat. Of late two associations had been formed with both of which the trade was liable to come into conflict. There was the Society of Public Analysts and the Medical Defence Association. Attempts were being made which if successful would almost entirely take from pharmacutists their rights. Occasionally, of course, gross offenders were prosecuted. We should be very sorry to defend these. Still, we would rather trust to our own judgment as to how far we should go than leave the selection of prosecutions to the uncontrolled will of these societies. Surely it was important that a body so liable to encroachment should organise an association for its own defence? The progress made within the last two months had been as rapid as could possibly be expected among persons so far separated from each other, and he had full confidence in the ultimate success of the movement. Mr. Reynolds then moved the adoption of the reports.

This was seconded by Mr. LAIRD, of Dundee, and carried unanimously.

Mr. GREAVES (Chesterfield) advocated the desirability of forming local associations throughout the country, to work in connection with the general association. Mr. Greaves explained what had been done in a small area at Chesterfield, where they already had twenty members, and he expected that every one in the district would join them.

Mr. BARCLAY said a scheme had been drawn up with a view of covering the whole of Great Britain in a representative manner. The scheme was necessarily a large and comprehensive one, and he hoped the time would soon come when the anticipations of the promoters would be realised. That the sympathies of the trade were with them was evident. The results where a canvass had been undertaken were almost astounding. Many gentlemen in various towns had taken the trouble to go round among their fellow chemists, and large numbers of new members had been brought in by this means. The president was an illustration. Every chemist in Leamington had joined the Association, many giving donations as well. He had just received a letter from Mr. Bell, of Hull, who sent a number of new names, and who said that without having made a general canvass they had found great sympathy, and had only met with one refusal, and in this case the reason given was that the Pharmacy Act of 1868 had done more harm than good to the trade. Mr. Humpage's letter in last week's *Pharmaceutical Journal* also indicated what could be done by personal effort. Over 1,200 members had been enrolled in two months, and this success fully warranted continued efforts. They wanted to embrace the whole of the trade and gather strength by union. The Pharmaceutical Society only reaches the fringe of the trade, but it was important to have an organisation representing the whole body. The advantage of such an association would be marked in the event of Parliamentary proceedings affecting the trade, which would probably be brought forward next session. He had been trying to learn the intentions of Sir William Frazer in respect to the Poisons Bill, which he had promised to bring forward. One of Sir W. Frazer's constituents had written to him, and had received a reply stating that before framing his Bill he intended to consult many physicians, surgeons, druggists, and lawyers, and he hoped to do some good in a matter which called for immediate attention. He (Mr. Barclay) thought the trade might be encouraged to believe that Sir Wm. Frazer's mind was ready to take impressions. No doubt the Pharmaceutical Council would give their earnest attention to this matter. But they would want help from the general body of the trade, and between the two associations it would be possible to influence every member of Parliament. There was no feeling of antagonism towards the Pharmaceutical Society in their movement. He was sure he could say for the leaders of the association, that not one of them had any antipathy towards the

Society, and there was no ground for any such charge. The object was merely to help in work which the Society could not accomplish. A country druggist, for example, might sell a pennyworth of spirit of nitrous ether, the analyst might go before the magistrate and state that it contained acid and what not which should not be present, and there had been frequent cases where druggists had submitted to this persecution which might have been prevented or defeated if they could have appealed at once to such an association as this to defend them. There was no intention, of course, to defend cases of adulteration. There was no intention to take up any case which would soil our reputation. The excise case lately tried in Glasgow would suggest to Scotchmen, who were proverbially careful, that their very carefulness should induce them to join the association. Another good result of such an association would be the formation of local organisations such as had been described by Mr. Greaves. This was the very backbone of the scheme. He would in a few words describe the scheme as it had been drawn up. It was proposed to divide the country into about 120 districts, each district to elect one or more representative to the general committee. It was thought that it might happen that after all these elections there might still remain some of the best men of the trade left out. It was therefore proposed that this general committee should have the power to elect not more than 30 additional members, thus bringing the total number up to 150. As an illustration of the divisions take Warwickshire. This county was divided into three districts, Leamington, Coventry, and Birmingham, each being at the head of one. The representative chosen from each district need not necessarily live in the town, but he might be a chemist in a village in the district. It had been suggested that the elections should not all take place at once, but that they should extend over the year, so that the secretary might, if necessary, go on circuit. The general committee when formed should select 20 gentlemen, to be nominated to the annual meeting, as the executive. This was to be merely a recommendation to facilitate business. The general committee to meet once a year (except in cases of special emergency), before the annual general meeting. The executive committee to meet from time to time as might be decided. By this scheme they would be able to put their hand on a battery which would in a few hours exert an influence throughout the kingdom. He moved that the scheme be adopted.

Mr. GREIG (Glasgow) seconded this motion. He was sure that the mutual support of England and Scotland would be very advantageous, and he described the liquid extract of meat case, showing the manner in which it had been got up.

Mr. PRESTON (London) said he took great interest in this movement, and he would like to remark in reference to this resolution that, the scheme not being in print, it was difficult to consider all its details. He thought it would not be advisable to pledge the meeting to this or any definite scheme, but they might suggest one to the committee, leaving it open to modifications. He heartily sympathised with the objects of this association, for he knew from experience how many hardships had been occasioned by the frivolous prosecutions which had taken place. The general course was, when a retailer had been attacked, that he applied to the wholesale firm which had supplied the article questioned. Frequently the latter felt bound in honour to defend their customer. He had noticed that as a rule the attacks had been made by analysts on those least able to defend themselves. This was a most ungenerous policy on the part of the analysts. Mr. Preston also referred to the random statements respecting the adulteration of drugs which had been made in Parliament, especially by Dr. Lyon Playfair. These statements had been shown to be inaccurate, but they had never been withdrawn, and naturally the public attached great importance to what a man in the position of Dr. Playfair might say. He did not wish to throw any slur on the Pharmaceutical Council, but it seemed to him that they might have taken some notice of such inaccuracies as these. If such work, however, be incompatible with their other duties, at least they need not object to the help which such an association as this could give. The course pursued by the analysts reminded him of the fable of the boys and the frogs. It might be very interesting to them to pursue their investigations in the manner they had chosen to adopt, but it was anything but fun for those who had the stones thrown at them.

Mr. Preston's suggestion was accepted, and the resolution was passed, with the addition of the words, "subject to such modifications as may be thought desirable."

Mr. MATTHEWS (London) moved the adoption of the rules, which he regarded as fair, simple, and comprehensive.—[These are printed below.]

Mr. MACKENZIE (Edinburgh) seconded this. He was very gratified to find that the operations of the association were to be extended to Scotland. This part of Great Britain, being the weaker, required help the more. The action of the analysts, who were certainly the flies in the apothecaries' ointment, rendered very necessary such an association as this. The Pharmacy Act, too, might be improved. He had always looked on it as either too much or too little. It caused a great deal of annoyance, and chemists ought to have more remuneration. It was high time we were talking to our members of Parliament on the subject, and the effect of the trade acting in union in such a matter was exhibited at the time when Mr. Forster tried to introduce his Poisons Bill a few years ago.

Mr. FAIRLIE then submitted the subjoined memorial, which he said had been only thought of the previous night, or many more signatures would have been added. It was to propose a separate executive for Scotland to act in union with the English executive. The circumstances affecting pharmacy in Scotland were in many respects peculiar, and though the kingdom was governed by a common Parliament, yet the Pharmaceutical Society had thought proper to establish a branch for Scotland. Mr. Fairlie showed how by union the citrate of magnesia case had been defeated at Greenock, while in London the prosecution had succeeded because there had been no one to take up the defence. He argued that branches of one association would be mutually advantageous and more economical than independent societies.

SCOTCH MEMORIAL.

To the President and Members of the Chemists' and Druggists' Trade Association.

GENTLEMEN,—The undersigned pharmaceutical chemists and chemists and druggists of Glasgow and other towns in Scotland, approving, as we do, the formation of a Chemists' and Druggists' Trade Association, the objects of which shall in no way conflict with the operations of the Pharmaceutical Society of Great Britain, desire to enrol ourselves as members of such an organisation, but as the trade in Scotland differs in many respects from that in England, and as we believe the arrangement will be of benefit to the association generally, we respectfully request that the executive consider the propriety of establishing a branch association for Scotland, and would suggest that the Scotch executive might consist of the members of the general committee residing in Scotland, with power relegated to them by the executive council of the association. (25 signatures.)

Mr. ANDREWS (London) moved that the memorial should be accepted.

Mr. GIBBONS (Manchester) seconded this, and it was carried.

Mr. KINNINMONT asked what responsibility had the Association taken in accepting this resolution?

The PRESIDENT explained that the resolution only conveyed that it should be submitted to the committee.

Mr. ANDERSON (Musselburgh) said the trade interests of the two countries were very different, and there was obvious reason for two boards. He thought, too, sometimes a different solicitor would have to be employed, as the practice in the Scotch Courts differed considerably from that of the English Courts. He hoped some influence might be brought to bear on the public, to show the effect of surgeons dispensing their own medicines.

Mr. ANDREWS said, in reference to the Pharmaceutical Society, he might mention that when he first saw the commencement of the Trade Conference he wrote to the secretary of the Pharmaceutical Society, expressing a fear that the proposed association might be an injury to the society. The secretary replied that he did not agree with him, but thought such an organisation would help them. That was the secretary's opinion, and he believed it was the view of most of the members of the Council.

The PRESIDENT moved a vote of thanks to the chemists of Glasgow and the neighbourhood for their exertions in promoting the success of this meeting. Mr. Ekin (Bath) seconded, and Mr. Mason (Liverpool) supported this, which was heartily carried.

Mr. BROWN (Manchester) moved a vote of thanks to the President, which was seconded by Mr. Jaap (Glasgow).

The proceedings were terminated by a luncheon in the same room, which was provided by the courtesy of a few Glasgow chemists.

ORGANISATION OF THE ASSOCIATION.

Committee meeting held September 6, 1876, in the Central Hall, Royal Hotel, Glasgow, the President (Mr. S. U. Jones) in the chair. Present—

Messrs. Andrews, Barclay, Fairlie, Groves, Greenish, Holdsworth, W. Laird, G. H. Laird, McKenzie, Matthews, Reynolds, Rimmington, and Thresh. It was unanimously resolved—

That the honorary secretary's and honorary treasurer's reports are hereby approved of, and that they be entered on the minutes, and be read at the General Meeting on Friday.

That Mr. T. W. Holdsworth be appointed honorary secretary for the present year.

That Mr. W. F. Haydon be appointed paid secretary to the association, security to be given to the satisfaction of the committee.

That Mr. H. Glaisyer, Bachelor of Laws of the University of London, Birmingham, be appointed solicitor to the association.

That Professor Atfield be appointed analytical referee to the association.

That Messrs. Laundy, Harrison & Harris, accountants, Birmingham, be appointed auditors to the association.

That Messrs. Lloyd's Banking Company (Limited), Birmingham, be the bankers of the association.

That the executive be authorised to take offices in Birmingham and to provide the requisite office furniture.

That the Rules 1 to 12, now read, be and are hereby approved of, as the constitution of the association.

That the scheme for organisation now before the committee be received and recommended to the general meeting.

That the following gentlemen form the Executive Committee for the present year:—

Mr. S. U. Jones, Leamington, president

Mr. Thomas Barclay, Birmingham, vice-president

Mr. William Southall, Birmingham, honorary treasurer

Mr. T. W. Holdsworth, Birmingham, honorary secretary

Mr. F. W. Andrews, London

" C. J. Arblaster, Birmingham

" W. Y. Brevitt, Wolverhampton

" W. J. Churchbill, Birmingham

" W. Cross, Shrewsbury

" George Delves, Exeter

That the following gentlemen be added to the General Committee:—

Mr. A. P. Balkwill, Plymouth

" F. B. Bengier, Manchester

" — Blanchard, Edinburgh

" T. Davison, Glasgow

" T. G. Gibbons, Manchester

" T. Glaisyer, Brighton

" W. Greig, Glasgow

" T. Haffenden, Brighton

" E. S. Hornby, Stockport

" R. Howden, London

" B. Humpage, London

" Charles Kerr, Dundee

Mr. Francis Earle, Hull

" J. M. Fairlie, Glasgow

" A. Greaves, Chesterfield

" Thomas Greenish, London

" Robert Hampson, London

" W. Jervis, Sheffield

" T. S. Johnson, Manchester

" William Laird, Dundee

" W. Matthews, London

" J. McKenzie, Edinburgh

" Richard Reynolds, Leeds

" J. Shaw, Liverpool

" G. Walker, Coventry

" R. Walker, Birmingham

Mr. G. H. Laird, Edinburgh

" A. McNanght, Greenock

" J. Owen, London

" G. Passmore, Exeter

" T. Redfern, Penrith

" J. Schweitzer, London

" G. Shepperley, Nottingham

" G. F. Steele, Plymouth

" A. Strachan, Aberdeen

" W. W. Urwick, London

" W. Woods, Plymouth

RULES.

1. This society shall be called the Chemists' and Druggists' Trade Association.

2. Its objects shall be the protection of the legitimate interests of chemists and druggists from unfair attacks and encroachments, and the promotion of their common welfare.

3. The annual subscription shall be five shillings, due in advance on the 1st day of July in each year. Members whose subscriptions are in arrear will be disqualified from voting at any general meeting.

4. The Annual General Meeting shall be held at some time within the months from May to September inclusive, at such place and time as the Executive Committee may determine. Notice shall be sent to each member by the secretary not less than 10 days previously.

5. The General Committee shall consist of representatives to be selected from the various districts throughout the country, in accordance with the scheme and resolution which has been adopted. In the event of a district failing to elect a representative the Executive Committee shall fill the vacancy.

6. The Executive Committee shall consist of a president, a vice-president, a treasurer, an honorary secretary, and 20 other members, to be elected by ballot at each annual meeting. Five members to form a quorum. It shall be the duty of the General Committee to prepare and recommend to the annual meeting a list of the names of members to serve on the Executive Committee for the ensuing year.

7. The votes at all meetings, where not otherwise provided for, shall be taken by a show of hands, but any two members may demand that the votes be taken by ballot, and in case of the numbers being equal, the chairman shall have a second or casting vote.

8. The railway expenses of the members of the Executive Committee shall be repaid by the association.

9. The duties of the paid secretary shall be determined by the Executive Committee, who shall control them unreservedly.

10. The association will retain within the discretion of the Executive Committee the right of determining whether action shall be taken in any

cases that may be suggested to it, either for prosecution or defence, but it will consider its members to have superior claims to those of chemists and druggists who are not members. When it is desirable that information shall be promptly given to members upon any question affecting trade interests, a private circular shall be issued to each.

11. The rules shall not be altered or rescinded, nor shall any new ones be added, excepting at an annual general meeting or at a special one called for the purpose. At least ten days' notice of such meeting must be given, and also of the alteration proposed.

12. A special general meeting may be called either by the Executive Committee, or on the demand in writing of any twenty-one members of the General Committee.

LIST OF PROMISED DONATIONS OF £1 AND UPWARDS, IN ADDITION TO THOSE ACKNOWLEDGED IN "THE CHEMIST AND DRUGGIST," JULY 15, 1876.

	£	s.	d.
Barclay & Sons, London	10	10	0
Barron, Squire & Co., London	10	10	0
Burgoyne, Brnbridges & Co., London	10	10	0
Evans, Sons & Co., Liverpool	10	10	0
Herrings & Co., London	10	10	0
Hirst, Brooke & Hirst, Leeds	10	0	0
Horner & Sons, London	10	0	0
Langton, Edden, Hicks & Clark, London	10	10	0
Maw, S., Son & Thompson, London	10	0	0
Sanger, John & Sons, London	10	10	0
Woolley, J., Sons & Co., Manchester	10	10	0
Birmingham Chemists—Balance of Trade Conference Luncheon Fund	6	1	6
Baiss Brothers & Co., London	5	5	0
Gibbons, T. G., Manchester	5	5	0
Hodgkinson, Preston & King, London	5	5	0
Howden, R., London	5	5	0
Sang & Barker, Edinburgh	5	5	0
Schweitzer, J., London	5	5	0
Greaves, A., & Sons, Chesterfield	5	0	0
Jones, W., Birmingham	3	3	0
Lorimer & Milne, London	3	3	0
Baynes, James, Hull	2	2	0
Broad & Son, London	2	2	0
Barnaby, H., Rochester	2	2	0
Chnbb, J. C., London	2	2	0
Fairlie, J. M., Glasgow	2	2	0
Hornby, E. P., Stockport	2	2	0
Jewsbury & Brown, Manchester	2	2	0
Mathews, Wm., London	2	2	0
Meggeson & Co., London	2	2	0
Palmer & Powell, Birmingham	2	2	0
Pattison, George, London	2	2	0
Smeeton, William, Leeds	2	0	0
Alcwood, E., Swansea	1	17	0
Edisbury, J. F., Wrexham	1	17	0
Mantell, Charles, Birmingham	1	17	0
Snowdon, F., Sonthall	1	17	0
Weston, J., Fenton	1	17	0
Harrison, J., Blackpool	1	15	0
Hinkley & Beardsall, Leicester	1	15	0
Beck, Henry, Albrighton	1	6	0
Davis, J. Forbes, London	1	6	6
Lloyd, R., Clay Cross	1	6	6
Pickburn, G. H., Kidsgrove	1	6	0
Pond, G. P., London	1	6	0
Thorley, C., Stow-in-Wold	1	6	0
Wilson, R., Clay Cross	1	6	0
Elliott, Luke, Grimesthorpe	1	5	0
Jones, C., Hanley	1	5	0
Watts, E. P., Dorchester	1	5	0
Lynn Chemists, per F. W. Abram	1	2	6
Alikins, T. B., Tamworth	1	1	0
Andrews, Frederick, London	1	1	0
Anthony, D., Cardiff	1	1	0
Arnold, Spencer, Tunbridge	1	1	0
Applegate, Edwin, London	1	1	0
Atherton, Mr., Nottingham	1	1	0
Bagnall, W. H., Lancaster	1	1	0
Bailey, William, Wolverhampton	1	1	0
Barton, H. E., Kenilworth	1	1	0
Barnitt, John, Leamington	1	1	0
Beckett, J. S., London	1	1	0
Bourdas, Mr., London	1	1	0
Bell, C. B., Hull	1	1	0
Bird, Alfred, Birmingham	1	1	0
Bourne & Taylor, London	1	1	0

	£	s.	d.
Bray, W., Buntingford	1	1	0
Brown, G., Sandown, Isle of Wight	1	1	0
Bullock, F., Anerley, London	1	1	0
Campion, Robert, Harlow, Essex	1	1	0
Cartwright, William, Newcastle-under-Lyme	1	1	0
Charrington, W., Lichfield	1	1	0
Churchill, W. J., Birmingham	1	1	0
Child, T., Leeds	1	1	0
Clark, Nettleship & Bailey, Leicester	1	1	0
Cole, Joseph, Barton-under-Needwood	1	1	0
Cooper & Son, Leicester	1	1	0
Corne, Wm., Ipswich	1	1	0
Crawley, B., Liverpool	1	1	0
Cubley, G. A., Sheffield	1	1	0
Delves, George, Exeter	1	1	0
Dixon, William, Cottingham	1	1	0
Dyer, William, Halifax	1	1	0
Dyson, Walter, Manchester	1	1	0
Ekin, C., Bath	1	1	0
Eho, James, Newcastle-on-Tyne	1	1	0
Evans, Gadd & Co., Exeter	1	1	0
Farr, Mr., Halifax	1	1	0
Foster, A. H., Birmingham	1	1	0
Foster, G. A., Birmingham	1	1	0
Fraser, Alexander, Largs	1	0	0
Gee & Sons, Whitehaven	1	1	0
Gorrie, Alexander, Kirkcaldy	1	1	0
Greenall, A., Liverpool	1	1	0
Green, J., Birmingham	1	1	0
Greenish, Thomas, London	1	1	0
Greig, William, Glasgow	1	1	0
Groves, Thomas B., Weymouth	1	1	0
Haffenden, T., Brighton	1	1	0
Hampson, Robert, London	1	1	0
Harrison, John, 33 Bridge Street, Sunderland	1	1	0
Harris, W. B., Sunderland	1	0	0
Hick, Allan, Waith-on-Dearne	1	1	0
Higgins, William, Farnham	1	1	0
Hucklebridge, G. M., London	1	1	0
Humby, L. W., Warminster	1	0	0
Humpage, B., London	1	1	0
Jaap, John, Glasgow	1	1	0
Jacobs, W. N., Birmingham	1	1	0
Jessop, Jonathan, Halifax	1	1	0
Jones, E. B., & Son, Carmarthen	1	1	0
Jones, F., London	1	1	0
Kinninmont, Mr., Glasgow	1	1	0
Krating, Thomas, Glasgow	1	1	0
Kerr, Charles, Dundee	1	1	0
Knowles, J. W., Reading	1	1	0
Litchfield, W., & Son, Longton	1	1	0
Lloyd, R., Clay Cross	1	1	0
Lowe, Walter, Manchester	1	0	0
MacNaught, A., Greenock	1	1	0
Martin, R. F., Horsham	1	1	0
McMillan, Glasgow	1	1	0
Mason, A. H., Liverpool	1	1	0
Mason, Newton, Birmingham	1	1	0
Matthews, William, London	1	1	0
Mellin, J. P., Wimbledon	1	1	0
Moor & Baly, Warwick	1	1	0
Newby, C. A., Leamington	1	1	0
Nichols, P., London	1	1	0
Nicholson, J. J., Sunderland	1	1	0
Noad, J., Reading	1	1	0
Owen, J., London	1	1	0
Parks, W., Reading	1	1	0
Passmore, G., Exeter	1	1	0
Parsons, F., Leicester	1	1	0
Partridge, W., Birmingham	1	1	0
Pinyon, Wm., London	1	1	0
Pointon, George, Birmingham	1	1	0
Postans, A. W., London	1	1	0
Prichard, E., London	1	1	0
Pridmore, William, Huickley	1	1	0
Pullin, W. H., Leamington	1	1	0
Reade Brothers, Wolverhampton	1	1	0
Reed, C. W., Lewisham	1	1	0
Redfern, Thomas, Penrith	1	1	0
Richardson, J., & Co., Leicester	1	1	0
Robinson, C. J., Streatham	1	1	0
Roberts, James, Tipton	1	1	0
Rochdale Chemists, per T. C. Lindsey	1	1	0
Robbins, Mr., London	1	1	0

	£	s.	d.
Savage & Son, Brighton	1	1	0
Semple & Sincort, Port Glasgow	1	1	0
Shepperley, George, Nottingham	1	0	6
Shaw, Mr., Liverpool	1	1	0
Sim, James, & Co., Aberdeen	1	1	0
Slugg, J. T., Manchester	1	1	0
Smith, G. F., Newcastle-on-Tyne	1	1	0
Smith, N., & Co., Cheltenham	1	1	0
Steele, G. F., Plymouth	1	1	0
Stamp, E. B., Hampstead	1	1	0
Stott, William, Sowerby Bridge	1	1	0
Strachan, Mr., Aberdeen	1	0	0
Sutton, F., Norwich	1	1	0
Storrar, David, Kirkcaldy	1	1	0
Thompson, J., Liverpool	1	1	0
Thonger, G., Harborne, Birmingham	1	1	0
Trotman, A., London	1	1	0
Underhill, Henry, Rishton	1	1	0
Urwick, W. W., London	1	1	0
Watts, E., London	1	1	0
Westrup, J. B., London	1	1	0
White, W., Glasgow	1	1	0
Wilcox, George, Birmingham	1	1	0
Wilkes, G. W., Birmingham	1	1	0
Wilson, E., Sheffield	1	1	0
Wilson, Richard, Clay Cross	1	1	0
Woods, William, Plymouth	1	1	0
Wright, Ann, Olney, Bucks	1	0	0
Wright, W. F., Leamington	1	1	0
Wright, G. H., London	1	1	0
Wright & Barnaby, Manchester	1	1	0
Wrighton, Henry, Cannock	1	1	0
Yewdall, E., Leeds	1	1	0
Bates, J., Wellington, Salop	1	0	0
Brook, Wm., Halifax	1	0	0
Iliffe, P., & Sons, Nuneaton	1	0	0
Shaw, B., Halifax	1	0	0

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council of the above society was held at the College of Physicians, Kildare Street, Dublin, on Wednesday, September 6, Sir D. J. Corrigan, M.D., Bart., in the chair. The following members were present: Dr. Aquilla Smith, vice-president, the Right Hon. the Lord Mayor, Mr. William Allen, Dr. Collins, Dr. Frazer, Mr. J. Goodwin, Mr. J. T. Holmes, Mr. Leet, Dr. Macnamara, and Dr. Ryan.

The following business appeared on the summons of meeting:

1. To consider a communication from the Chemists' and Druggists' Society of Ireland.

The communication having been read by the registrar, a very lengthy and animated discussion took place as to the form of reply, nearly all the members taking part. Eventually a reply was agreed to, and the registrar was instructed to have copies of the letter and reply printed. These will appear in our next. The meeting was then adjourned to the 13th. The last of the examinations under the modified course is now proceeding. Ninety-six candidates have presented themselves. It is thought that not more than one-half will be successful. Seven of the council retire in October, but are eligible for re-election. The following are the retiring members: The Right Hon. the Lord Mayor, Dr. Aquilla Smith, vice-president, Mr. M. V. Bourke (Limerick), Dr. Frazer, Mr. W. Goulding, M.P. (Cork), Mr. J. T. Holmes, and Dr. Whitaker (Belfast).

The following pharmaceutical chemists were admitted members of the Pharmaceutical Society of Ireland:—

Proposed by Mr. Tichborne and seconded by Mr. Holmes:—

William Sterling, Kilkenny.	Hatchell Whitby, Dublin.
Stephen R. Metcalfe, Clonmel.	Stephen J. Byrne, Londonderry.
John Laird, Limerick.	Cornelius Mannin, Dublin.
John McIlwaine, Newry.	Edward Brady, Cork.

Proposed by Mr. Allen and seconded by Mr. Goodwin:—

George H. Grindley, Dublin.
Robert Simpson, Dublin.

Proposed by Mr. Holmes and seconded by Mr. Hayes:—

Edward Bruker, Dublin.
William Stewart Park, Dublin.

Educational Information.

IN giving particulars concerning pharmaceutical and medical education we show first the requirements of the various bodies to which are entrusted the power of granting diplomas, and afterwards we give some particulars of the schools which especially furnish the instruction required.

PHARMACEUTICAL DIPLOMAS.

The right to practise as a chemist and druggist in Great Britain is, by the Pharmacy Act of 1868, restricted to such candidates as pass (a) the Preliminary Examination, and (b) the Minor Examination of the Pharmaceutical Society. The Major Examination is purely honorary, and on passing it the title of Pharmaceutical Chemist is obtained. Unlike the practice in medical examining bodies, no special curriculum of study is stipulated, candidates obtaining their knowledge how and where they please. Candidates for the Minor Examination must, however, produce certificates of having attained the age of 21 years; and from January 1, 1877, each candidate will have to produce certificates to the effect that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions. The following are the

Regulations of the Board of Examiners for the Examination and Registration of Pharmaceutical Chemists, Chemists and Druggists, and Apprentices or Students.

In accordance with the Pharmacy Acts, 15 & 16 Vict. cap. 56; 31 & 32 Vict. cap. 121; and 32 & 33 Vict. cap. 117.

THE FIRST OR PRELIMINARY EXAMINATION.*

(For Registration as "Apprentices" or "Students.")

This Examination is held throughout Great Britain on the first Mondays in January, April, July, and October in every year. Candidates for this examination must give not less than fourteen clear days' notice.

The examination is a written one, and comprises—

Latin,—translation into English of a paragraph from the first book of Cæsar ("De Bello Gallico.")

Latin Grammar.

English Grammar, Composition.

The first four rules of Arithmetic, Simple and Compound, Vulgar Fractions and Decimals, and a thorough knowledge of the British and Metrical systems of Weights and Measures.

In the case of candidates residing in the country and unable to attend in London or Edinburgh, the Registrar shall send the questions, under seal, to the person appointed to superintend the writing of the answers, with instructions that they be opened by him in the presence of the candidates, who shall write the answers forthwith in his presence in a given time. The questions are prepared and reported upon by the College of Preceptors.

The Board of Examiners in London meets for conducting the Minor and Major Examinations every month, except in August and September. For the Modified Examination the Board meets as often as required. Candidates must give notice to the Registrar of their intention to present themselves, and pay the fee, on or before the first day of the month in which the examinations are held. A registrar's certificate of birth must be produced by each candidate at the time of giving notice. Secretary and Registrar, Elias Bremridge, 17 Bloomsbury Square, London, W.C.

The Board of Examiners in Edinburgh meets for the Major, Minor, and Modified Examinations as often as required. Fourteen days' notice is necessary. A registrar's certificate of birth must be produced by each candidate at the time of giving notice. The dates of meetings are announced in the *Pharmaceutical Journal*. Secretary to the Board in Edinburgh, John Mackay, 119 George Street, Edinburgh.

* Certificates of having passed the Local Examinations of the Universities of Oxford, Cambridge, or Durham, the Examination of the College of Preceptors, or those of any legally constituted Examining Body previously approved by the Council, provided Latin and Arithmetic be included in the subjects, are accepted in lieu of this examination.

MINOR EXAMINATION.

(For Registration under the Pharmacy Act, 1868, as "Chemists and Druggists.")

Candidates for this examination must have passed the First or Preliminary Examination.

The following form the subjects of examination:—

Prescriptions.—The candidate is required to read without abbreviation autograph prescriptions; translate them into English; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of Posology; also to render in good Latin ordinary prescriptions written in English.

Practical Dispensing.—To weigh, measure, and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package.

Pharmacy.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, and have well-marked physical characters, such as extracts, tinctures, powders, &c.; to give the proportions of the active ingredients and possess a practical knowledge of the processes, and the principles of the processes, by which they are made, and of the best excipients and methods of manipulation for forming emulsions, pills, &c.

Materia Medica.—To recognise specimens of roots, barks, leaves, fruits, resins, gums, animal substances, &c., used in medicine; give the botanical and zoological names of the plants, &c., yielding them, and the natural families to which they belong; name the countries and sources from which they are obtained, the officinal preparations into which they enter, and judge the quality and freedom from adulteration or otherwise of the specimens.

Botany.—To recognise the more important indigenous plants used in medicine. To possess a general knowledge of the elementary structure of plants, and the structure and distinctive characters of roots, stems, leaves, and their parts. To name and describe the various parts of the flower.

Chemistry.—To recognise the ordinary chemicals used in medicine. To possess a practical knowledge of the processes by which they are produced, the composition of such as are compound, and explain the decompositions that occur in their production and admixture, by equations or diagrams. To determine practically, by means of tests, the presence in solution of the chemicals in common use, and explain the reactions which occur in each case. To possess a general knowledge of the laws of chemical philosophy, and a practical knowledge of the means of determining specific gravities, densities, and temperature, and of the instruments appertaining thereto, and the physical and chemical constitution of the atmosphere.

MAJOR EXAMINATION.

(For Registration as "Pharmaceutical Chemists" under the Pharmacy Act, 1852.)

Candidates for this examination must have passed the Minor Examination at least three months previously.

Materia Medica.—This comprises a practical knowledge of the methods of estimating the value of important drugs, of obtaining their active proximate constituents in a separate state; of identifying them and ascertaining their purity or impurity by tests.

Botany.—This comprises an intimate acquaintance with the parts of the flower, fruit, and seed; the functions and mode of arrangement of the different organs of plants; a knowledge of the general principles of classification, and of the Linnæan and De Candolle's systems. The candidate must be able to distinguish practically between each of the following natural orders:—Ranunculacæ, Papaveracæ, Crucifæræ, Malvacæ, Leguminosæ, Rosacæ, Cucurbitacæ, Umbelliferæ, Compositæ, Gentianacæ, Convolvulacæ, Solanacæ, Atropacæ, Labiatæ, Scrophulariacæ, Polygonacæ, Euphorbiacæ, Orchidacæ, Iridacæ, Liliacæ, Melanthacæ, Graminacæ; and refer to their respective orders such specimens as may be shown to him.

Chemistry.—This comprehends an intimate knowledge of the laws of chemical philosophy, a practical knowledge of the nature and properties of the elements and their compounds, both organic and inorganic, especially those used in medicine or the arts. The different combinations and decompositions

must be explained by equations; also the *qualitative* analysis of the more important chemicals, *e.g.*, Nitrates, Chlorides, Carbonates, Sulphates, Phosphates, Oxalates, Tartrates, &c., and the detection of impurities in them, and the *volumetric* estimation of the strength of all Pharmacopœia preparations in which standard solutions are ordered to be used.

An elementary knowledge of the properties of light, heat, electricity, and magnetism is also required.

If a candidate fail to pass either of the examinations, the fee will be returned, less one guinea, but he will be admitted to a subsequent examination, after an interval of three months, on giving the usual notice and payment of the full fee.

Examination or Registration Fees and Subscriptions to the Society.

FEES.	ANNUAL SUBSCRIPTIONS on becoming connected with the Society.	
	£ s. d.	£ s. d.
First or Preliminary (Registered as Apprentices or Students)	2 2 0	0 10 6
Minor (Registered as Chemists and Druggists)	3 3 0	0 10 6
Major (Registered as Pharmaceutical Chemists)	5 5 0	1 1 0
Or a Life Member's Commutation Fee of Twenty Guineas.		
Chemists and Druggists in business before August 1, 1868, and registered as such, on being elected Members of the Society, pay an Entrance Fee of	£2 2 0	
And Subscription for the current year	1 1 0	
		£3 3 0

THE SCHOOL OF PHARMACY OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

PROFESSORS.

CHEMISTRY AND PHARMACY	Professor REDWOOD, F.C.S.
BOTANY AND MATERIA MEDICA	Professor BENTLEY, F.L.S.
PRACTICAL CHEMISTRY	Professor ATTFIELD, F.C.S.

The thirty-fifth Session will commence on October 2, 1876, and will terminate on July 31, 1877.

Application for admission to the school, for prospectuses, or for further information, may be made to the professors or their assistants in the Lecture Room or Laboratories, 17 Bloomsbury Square, London, W.C.

CHEMISTRY AND PHARMACY.

By Professor REDWOOD, PH.D., F.C.S.

These lectures are delivered on Monday, Tuesday, and Wednesday mornings, at 9 o'clock.

The course consists of 60 lectures of an hour and a half each, equivalent to 90 lectures of the usual length. They include an exposition of the leading principles and doctrines of the science of chemistry and of those branches of allied physical science, the applications of which are involved in the qualifications required for the practice of pharmacy. There are two of these courses during the session, the course which commences in October and ends in February being repeated in the following five months from the beginning of March to the end of July. The whole of the subjects are thus expounded twice in ten months. Students who are unable to commence their attendance at the beginning of the session may enter at any time between October and March. Each course is complete in itself, and includes a description of all the most important chemical and galenic preparations used in medicine, which will be fully illustrated with experiments, diagrams, and specimens; but some of the facts referred to in illustration of principles are not the same in each of the courses.

First course, commencing October 2, 1876, at 9 o'clock A.M. Second course, commencing March 5, 1877, at 9 o'clock A.M.

The subjects treated of in these lectures are comprised under three heads:—1. Physics in relation to chemistry and pharmacy. 2. Inorganic chemistry. 3. Organic chemistry.

FEES.

One Course	£ 3 3 0
An entire Session (two courses)	4 4 0
Perpetual admission	5 5 0

BOTANY AND MATERIA MEDICA.

By Professor BENTLEY, M.R.C.S. Eng., F.L.S.

These lectures are delivered three times a week, on Thursday, Friday, and Saturday mornings, at 9 o'clock, throughout the session, which extends from the beginning of October to the end of July.

During the session two courses of lectures are given, each consisting of about 60 lectures and weekly examinations. The first course, extending from the beginning of October to the end of February, comprises botany and materia medica, with especial reference to structural botany and the use of the microscope in distinguishing the various drugs; and the second course, which commences in the first week in March and extends to the end of July, also comprises botany and materia medica, but with especial reference to systematic and practical botany. Each course is, therefore, complete in itself, although each has a definite object in view; thus affording students who have but a limited time at their disposal an opportunity of attending at a period most convenient to themselves.

First course, commencing October 6, 1876, at 9 o'clock A.M., is divided into two parts, as follows:—Part I.—Structural and Physiological Botany. Part II.—Organic Materia Medica. The medicinal substances obtained from the organic kingdom constitute the special object of this course. They are considered in the order of the natural historical relations of the organised beings which produce them. This part of the course being designed for the instruction of pharmaceutical and analytical students, will comprise only a brief notice of the effects and uses of medicines, so as to admit of a fuller description of that portion of the subject which belongs more immediately to the pharmacist and analyst. The medicinal substances which are derived from the official plants and animals will be more particularly described; but all others in common use, or which have been recently introduced, will be also alluded to.

Second course, commencing March 2, 1877, at 9 o'clock A.M., also comprises Botany and Materia Medica, but with especial reference to Systematic and Practical Botany.

All students attending the second course will be presented by the professor with orders of admission to the Gardens of the Royal Botanic Society in Regent's Park. These orders will be available for six months, admitting the bearer daily (Sundays and fête days excepted), from 9 A.M. to 1 P.M. in the spring months, and from 7 A.M. to 1 P.M. in the summer. Students can also at any time during the session, by applying to the professor, obtain daily orders of admission to the Gardens; and thus every opportunity is afforded them of becoming practically acquainted with plants and their parts or organs.

SYSTEMATIC AND PRACTICAL BOTANY.

This portion of the second course, which extends from about the middle of May to the end of July, is delivered in the Royal Botanic Society's Gardens, Regent's Park, on Friday and Saturday mornings at eight o'clock. Separate entries may be made for this portion of the course. (See Fees.)

FEES.

Botany and Materia Medica, one Course (five months)	£ 2 2 0
An entire Session (two Courses), including Systematic and Practical Botany	3 3 0
Systematic and Practical Botany, separately	1 1 0
Perpetual Admission to all the Courses	4 4 0

A student entering for the first course on Botany and Materia Medica is also entitled to attend the lectures on Systematic and Practical Botany on payment of two guineas and a half at the time of entering this first course in October.

PRACTICAL CHEMISTRY.

Professor of Practical Chemistry	DR. JOHN ATTFIELD, F.C.S.
Demonstrator	MR. ROBERT H. DAVIES, F.C.S.
Assistant-Demonstrator	DR. ALFRED SENIER, F.C.S.

The session commences on Monday, October 2, at 10 A.M. The laboratories are open from ten o'clock in the morning until five in the afternoon daily, except on Saturdays, when they are closed at two o'clock.

There is no general class for simultaneous instruction, each student following an independent course of study always determined by his previous knowledge; pupils can therefore enter for any period at any date. A complete course of instruction, including the higher branches of quantitative analysis, occupies ten full months, and dates from the day of entry to that day twelvemonth.

Each student is provided with certain apparatus, fuel, chemicals, &c., and his working bench is fitted with lock-up cupboards, in which to place the articles lent to him and those purchased by himself. The apparatus which he is required to purchase can be obtained of any chemical-apparatus maker for about 25s. He must also obtain a few chemicals and sundries.

FEES.

Hours of Study	One Month	Two Months	Three Months	Five Months	Ten Months
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
10.0 to 5.0 daily (Sat. 10.0 to 2.0)	4 4 0	7 7 0	10 10 0	15 15 0	26 5 0
10.0 to 5.0 on any 3 days weekly ..	2 17 6	4 17 6	6 16 6	10 10 0	17 17 0
10.0 to 5.0 on any 2 days weekly ..	2 2 0	3 10 0	4 17 6	7 7 0	12 12 0
Any 3 hours daily	2 17 6	4 17 6	6 16 6	10 10 0	17 17 0
Any 2 hours daily	2 2 0	3 10 0	4 17 6	7 7 0	12 12 0

THE NORTH LONDON SCHOOL OF PHARMACY, CHEMISTRY, &c.

54 Kentish Town Road, N.W.

Mr. J. C. Braithwaite instructs pupils in Chemistry, Materia Medica, Botany, and Latin. Each pupil works independently. Fee, half-guinea per month to either class.

THE SOUTH LONDON SCHOOL OF PHARMACY.

325 Kennington Road.

The session commences on September 15, and lasts till July 20, and the following courses of lectures, etc., are delivered several times during the session:—Latin: A course of sixty lessons. Botany: A course of sixty lectures. During the summer months a lecture is delivered once a week, at Mitcham, on Mr. Bridger's herb farm. Materia Medica: A course of sixty lectures. Pharmacy: This course lasts three months, and includes—A description of the processes used in pharmaceutical laboratories, and practical instruction in dispensing and elegant pharmacy. Theoretical Chemistry: A course of sixty lectures. Practical Chemistry: 1. Junior Course (three months): This includes—1. The manufacture of the chief chemicals of the B.P., in which the processes are typical; 2. Qualitative analysis, and separation of bases and acids; 3. The practical taking of

specific gravities, temperatures, and the measurement of gases. II. Senior Course (six months):—This extends to—1. Detection of poisons in organic mixtures. 2. Quantitative analysis of B.P. substances, gravimetric and volumetric; 3. Analysis of manures, water, minerals, etc.; 4. Microscopic and chemical examination of food and drugs, for detecting adulterations; 5. Elementary organic analysis.

Fees.—1. For the whole course of lectures (including admission to the museum), 8*l.* 8*s.* (This fee entitles laboratory students to attend from the date of entry to the end of the entire session. For example, a student entering the school in September can continue to attend the lectures if he chooses until the end of the session in July without extra expense, provided he also attends the laboratory). 2. For the laboratory—Junior Course, three months, 6*l.* 6*s.*; Senior Course, first month, 4*l.* 4*s.*; each succeeding month, 3*l.* 3*s.* Students who attend the lectures must also take laboratory tickets, as the course cannot be divided in any way.

The institution offers silver and bronze medals, for which all the students can compete.

SOUTH WESTERN COLLEGE OF CHEMISTRY AND PHARMACY.

368 Clapham Road, London, S.W.

Director—Mr. A. RIVERS WILLSON, Mem. Ph. Soc. London.

Professor of Classics—Mr. W. LEPIKE, B.A.

Secretary—Mr. EDMUND A. LEWES.

Students are prepared at this institution for the Pharmaceutical Examinations.

FEES.—The entire course, one month, 2½ guineas; three months, 6 guineas. Practical Chemistry or Dispensing only, 1 guinea per month; any other single subject, 15 shillings per month. Two hours daily, or four hours three times a week.

We are informed that a scholarship, entitling the successful candidate to six months' tuition at this school free, is to be competed for on October 9. It is open to any student who has passed the Preliminary Examination, and is 21 years of age. The postal system of instruction is also conducted from this school.

THE SURREY SCHOOL OF CHEMISTRY AND PHARMACY.

32 Auckland Road, New Wandsworth, S.W.

Mr. H. Judd (Science Teacher, Govt. Cert.) gives practical instruction in the subjects required for the Preliminary, Minor, and Major Examinations. Mr. Judd also offers to teach students through the post.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY.

133 St. George's Road, Southwark, London, S.E.

Principal—GEORGE S. V. WILLS, Pharmaceutical Chemist.

The Session extends from September 1 till July 20.

At this institution resident pupils are received, as well as others. The course comprises lectures and practical laboratory instruction in all the subjects required for the Pharmaceutical Examinations. All apparatus and chemicals required in the laboratory are supplied to pupils free.

Prize medals and certificates of attendance and merit are awarded monthly.

Fees.—For the whole course of lectures, including the laboratory fees and admission to the museum (which contains every specimen of Pharmacy, Materia Medica, and Chemistry), 10*l.* 10*s.*; board and apartments, 1*l.* 1*s.* per week extra; for this fee the student can attend until the end of the session without extra cost. Students desirous of entering for a term of one, two, or three months can do so. Terms:—Resident pupils, 7*l.* 7*s.*; non-resident, 3*l.* 3*s.* per month. All fees payable in advance.

Botanical excursions are made every Saturday during the season.

Classes are held every evening at 8 P.M. for the benefit of students engaged during the day. Terms—5*s.* per month.

As students work independently they can enter at any time. Private tuition, 3*s.* per hour.

A system of postal instruction is also organised at this school.

THE MANCHESTER SCHOOL OF PHARMACY.

(In connection with the Manchester Chemists' Association.)

The following Courses of Lectures will be delivered by Mr. Louis Siebold, F.C.S., at 225 Oxford Street:—Thirty lectures on Chemistry, on Friday evenings, from 7.30 to 9 o'clock; commencing on October 6; fee, 30*s.* Twenty-five lectures on Materia Medica and Pharmacy, on Tuesday evenings, from 7.30 to 8.45; commencing October 10; fee, 25*s.* Twenty lectures on Analytical Chemistry, on Tuesday evenings, from 8.45 to 9.45; commencing October 10; fee, 20*s.* Composition Fee, admitting the student to all three courses, 3*l.* 5*s.* Students attending these courses must be Associates of the Manchester Chemists' Association. The subscription (2*s.* 6*d.*) may be paid with the fees. Tickets and further information may be obtained of Mr. Siebold, or of Mr. F. Baden Bengier, Hon. Sec., 7 Exchange Street. [N.B.—A course of lectures on Botany, by Mr. Leo H. Grindon, will be commenced early after Christmas.]

THE MEDICAL PROFESSION.

To obtain the legal right of practising medicine, registration by the General Medical Council is essential. This can only be obtained after a certain curriculum, and a diploma or degree granted by one of the licensing bodies which that Council recognises.

In the United Kingdom there are nineteen corporations which

exercise the privilege, under the control of the General Medical Council, of granting licenses to practise medicine. These bodies are named below, and we also give a summary of their requirements, of the diplomas they grant, and of the fees they demand.

It is very essential that the intending student of medicine should at the outset of his curriculum select for himself the qualifications which he intends to take; in other words, that he should make up his mind to which of the corporate bodies he proposes offering himself for examination. This is due to the fact that, as things are at present, the standard of examination at these different bodies varies considerably, and so also does the amount of attendance upon medical classes demanded by them. While some of them require that the student shall spend a certain number of his four years of study at their particular schools, others allow him to follow out his whole curriculum at any recognised school he may choose to fix upon. The corporate bodies alluded to are divisible into two classes, viz., Universities and Licensing Bodies. Universities alone are entitled to grant degrees such as those of M.B. (*Bachelor of Medicine*), M.C. or M.S. (*Master of Surgery*), and M.D. (*Doctor of Medicine*).

The student, having determined whether he wishes to obtain a university degree, or simply qualifications in medicine and surgery, must pass a preliminary examination on matters pertaining to general education before he begins any medical studies at all (unless he commenced his studies before October, 1861), inasmuch as his attendance at medical classes does not count until this preliminary examination has been passed. Every university and licensing body holds a preliminary examination, but there is no doubt that the Matriculation (or preliminary) Examination of the University of London, although the hardest, is by far the most useful to obtain, inasmuch as the student can then study specially for the London degrees, if he chooses, and is exempted from all preliminaries at other universities and licensing bodies (except Oxford), and also from any further preliminary in case he should desire to proceed to the *Fellowship* of the College of Surgeons. If he does not pass the London Matriculation, but wishes to obtain the Edinburgh University degree, he must pass the preliminary of that university; while if he wishes to obtain the usual qualifications in medicine and surgery, it is comparatively a matter of indifference before which of the licensing bodies he appears, as the preliminary of any one of them franks all the others. The preliminary examinations most commonly resorted to are those of the London College of Surgeons, of the conjoined Colleges of Physicians and Surgeons of Edinburgh, of the Apothecaries' Society, and of the Glasgow Faculty of Physicians and Surgeons, or the Registration Examination for Medical Students of the University of Durham.

After passing his Preliminary Examination, the student is at liberty to register. He must then pass four years in professional study. Of these four years it is required by the College of Physicians and College of Surgeons that at least two and a-half years should have been passed at a hospital medical school. Of course the whole of the four years may have been so occupied, or the other eighteen months may be passed with a qualified medical practitioner, who, holding one or more public appointments, can afford him "such opportunities of practical instruction as shall be satisfactory" to the various examining boards. Most of the hospital medical schools have also scholarships attached, which are open for competition among students.

The General Medical Council fixes twenty-one as the earliest age at which a candidate for any professional license shall be admitted to his final examination, the age in all instances to be duly certified. Previous to this final examination the Council requires as a minimum of qualification that he must have been registered as a medical student at least forty-eight months, and must have gone through a course of professional study, comprehending attendance during four winter sessions or three winter and two summer sessions at a recognised school. The Medical Council also makes certain claims with regard to the examinations themselves. With regard to the Preliminary, which must be passed before a medical student may be registered as such, it is required that it shall include English language (including Grammar and Composition), Arithmetic (including Vulgar and Decimal Fractions), Algebra (including Simple Equations), Geometry (first two books of Euclid), Latin (including Translation and Grammar); and one of the following optional subjects: Greek, French, German, Natural Philosophy (including Mechanics, Hydrostatics, and Pneumatics).

For the Professional Examination it requires, "That the Professional Examination for a license be divided into two parts; the first embracing the primary or fundamental branches directly connected with the practice of medicine or surgery. That the former be not undergone till after the close of the winter session of the second year of professional study; and the latter, or final examination, not until after the close of the prescribed period of professional study."

"That the examination in Physics, Botany, and Natural History may be undergone at an earlier period than the first Professional Examination."

"That the Professional Examinations be conducted both in writing and orally, and that they be practical in all branches in which they admit of being so."

"That excellence in one or more subjects should not be allowed to compensate for failure in others; and that if a candidate be rejected for failure in any one subject he should be re-examined in all."

The foregoing are the requirements of the General Medical Council, which holds, and can withhold, the right of registration. The reader will bear in mind that these stipulations *at least* have to be observed by all the examining bodies, and this will save us much repetition.

The examining bodies themselves are the following:—

The University of Oxford, which grants the degrees of **M.B.** and **M.D.** The medical student must pass the requisite examinations for the degree of **B.A.**, and afterwards spend two years in study prior to the first or scientific examination for the degree of Bachelor of Medicine, and two years more prior to the final or practical examination for the same degree. Evidence must be brought to show that he has studied the practical parts of his profession in a first-class hospital. A dissertation has to be publicly read three years after the **M.B.**, for the degree of **M.D.**

The University of Cambridge, besides **M.B.** and **M.D.**, grants the degree of **M.C.** (Master in Surgery). For **M.B.** five years of medical study are required, except in the case of medical students who have graduated with honours as Bachelors of Arts, four years being then sufficient. There are three examinations. The *first* in Mechanics and Hydrostatics, Chemistry (with heat and electricity), and Botany. The *second*, in Anatomy and Physiology (Human and Comparative), and Pharmacology. The *third* (at the conclusion of medical study), in Pathology and the Practice of Physic, Clinical Medicine, and Medical Jurisprudence. The examinations are partly in writing and partly oral, in the hospital, and take place twice annually. Previously to the first examination, lectures must have been attended on Chemistry (with manipulations) and Botany. Previously to the second examination, the student must have attended lectures on Anatomy and Physiology (Human and Comparative), Materia Medica, Pharmacy, and Pathology; have dissected one season; and attended hospital practice one year. Previously to the third examination, lectures must have been attended on the Principles and Practice of Physic, Clinical Medicine, and Medical Jurisprudence; also Hospital Practice for three years.

The degree of **M.D.** may be taken three years after **M.B.** The regulations are similar to those at Oxford.

For the degree of **M.C.**, the candidate must have passed the three examinations for **M.B.**, and have attended lectures on Human Anatomy (a second course), on the Principles and Practice of Surgery, Clinical Surgery, Midwifery (with ten cases); also a second season of Dissections, three years' surgical practice at a recognised hospital, and a house-surgeoney or dressership for six months. He is then required to pass an examination in Surgical Anatomy, Pathology, the Principles and Practice of Surgery, and Clinical Surgery.

The University of London stipulates for the **M.B.** degree: (1) The Matriculation Examination, or a degree of Arts, is accepted from the Universities of either Sydney, Melbourne, or Calcutta. (2) The Preliminary Scientific Examination and two examinations in medicine. The student must also have been engaged in professional studies at least four years subsequent to matriculation. The degree of **M.D.** may be competed for four years, or, in some cases, five years after the **M.B.** degree has been taken. It includes Logic and Moral Philosophy and Medicine, including practical examination in Clinical Medicine. The University of London also grants the degrees of **B.S.** and **M.S.** (Bachelor and Master in Surgery). These comprehend the **M.B.**

The University of Durham grants a license in medicine four years after matriculation, **M.B.** three years later, and **M.D.** one year later still, provided that the requisite courses are fulfilled and examinations passed. *Licentiates* and *Masters in Surgery* are also degrees granted by this University. These do not necessarily require that all the examinations for **M.B.** shall be passed.

Note.—Practitioners of fifteen years' standing are now admitted, under certain conditions, to the degree of **M.D.** without previous residence.

The University of Edinburgh confers the degrees of **M.B.**, **C.M.**, and **M.D.** The first must be passed before either of the others are granted. For the **M.B.** and **C.M.** degrees a course of four years, at least, of medical and surgical study is required, and each candidate is examined both in writing and *viva voce*—1st, on Chemistry, Botany, and Natural History; 2nd, on Anatomy, Institutes of Medicine, Materia Medica, including Practical Pharmacy and Pathology; 3rd, on Surgery, Practice of Medicine, Midwifery, and Medical Jurisprudence; 4th, clinically on Medicine and on Surgery in a hospital. For the **M.D.** degree two years of medical and surgical practice must elapse, the candidate must be a graduate in Arts, and must submit a thesis composed by himself on any branch of knowledge comprised in the professional examinations for the **M.B.** degree.

The University of Glasgow grants the same degrees, and provides curricula and examinations similar to those of the University of Edinburgh.

The same may be said of the **University of Aberdeen**.

Also of the **University of St. Andrew's**; except that by the latter the degree of Doctor in Medicine may be conferred on any registered medical practitioner above the age of forty years whose professional position and experience are such as, in the estimation of the University, to entitle him to that degree, and who shall, on examination, satisfy the medical examiners of the sufficiency of his professional knowledge; provided always, that degrees shall not be conferred, under this section, to a greater number than ten in any one year.

The University of Dublin (Trinity College) grants the degrees of **M.B.**, **M.D.**, and **M.Ch.**, and also licenses in medicine (**L.M.**) and surgery (**L.S.**). To take the degree of **M.B.** it is required that the candidate shall also take that of **B.A.**, and shall have attended hospital and lectures for four years. The **M.D.** degree is granted to an **M.B.** of three years' standing, who must perform exercises before the Regius Professor of Physic. The degree of **M.Ch.** demands a curriculum somewhat different from, though of the same length of time as, that required for the **M.B.** examination. A licentiate in medicine or surgery has passed the medical course and examinations required for **M.B.** or **M.Ch.** respectively, but the fees are somewhat lower. He can, however, afterwards take up his degree.

The Queen's University of Ireland comprises the Queen's Colleges of Belfast, Cork, and Galway, each of which possesses a Faculty of Medicine. The degrees of **M.D.** and **M.Ch.** are granted by this University. The curriculum for either extends over four years, and comprehends the usual subjects.

Besides the foregoing Universities, the following Corporations grant licenses to practise:—

The Royal College of Physicians, London. There are Licentiates, Members, and Fellows of the Royal College of Physicians, London. The licentiates have passed a Preliminary Examination in Arts, and two other professional examinations, besides giving evidence of at least four years of professional education as a registered medical student. The fee is fifteen guineas. The course of study previous to the examination for membership is almost similar to that prescribed for the licentiates. Members may also be admitted, after a certain examination, who have taken the degree of **M.B.** at other universities. The fee is thirty guineas. The members of the College are eligible for Fellowship.

The Royal College of Surgeons of England. To become a member the following course is prescribed. Preliminary Examination:—Students can pass this at the College. Fee 2*l.* Certain certificates, as, for instance, that of the Middle Class Examinations (Senior), are accepted in lieu of this examination,

provided such include Latin and Mathematics. The Professional Education must comprise four years' of study subsequent to the Preliminary Examination, and include certain attendances at lectures and hospital practice. The fee is 22*l*. For Fellowship the curriculum is longer, the examinations more severe, and the fees higher. Or a member of eight years' standing may offer himself for the final examination for the Fellowship. The Royal College of Surgeons also grants certificates of qualification in midwifery and in dental surgery.

The Royal College of Physicians, Edinburgh, grants licenses in medicine. The fee here is ten guineas. The curriculum is very similar to that which has been described. Any licentiate of a College of Physicians, or graduate of a British or Irish University, with whose knowledge of medical and general science the College may be satisfied, may be admitted a member of the College, provided he shall have attained the age of twenty-four years. The fee to be paid by a member is 31*l*. 10*s*. When a licentiate is raised to the rank of member he pays 21*l*. When a member is raised to the rank of fellow the fee is 31*l*. 10*s*., exclusive of stamp-duty, which amounts to 25*l*.

The Royal College of Surgeons, Edinburgh, also grants diplomas of membership. The fee here for the professional examination amounts to 10*l*.

The Royal College of Physicians of Edinburgh, and the Royal College of Surgeons of Edinburgh, while they still continue to give their diplomas separately, under separate regulations, have made arrangements by which, after one series of examinations, the student may obtain the diplomas of both colleges. The general principle of this joint examination is that it shall be conducted by a board in which each body is represented in those branches which are common to both medicine and surgery; but that the College of Physicians shall take exclusive charge of the examination in medicine, and the College of Surgeons of the examination in surgery. The object of the joint examination is to give to students facilities for obtaining from two separate bodies, and at less expense, a qualification in medicine and a qualification in surgery. Students passing that examination successfully will be enabled to register two qualifications under the Medical Act—Licentiate of the Royal College of Physicians of Edinburgh and Licentiate of the Royal College of Surgeons of Edinburgh.

The Faculty of Physicians and Surgeons of Glasgow also grant a diploma. The candidates follow a curriculum similar to that of the Edinburgh College of Surgeons. The fee for the Preliminary Examination is 10*s*., and for the Professional Examinations 10*l*. In connection with the Royal College of Physicians of Edinburgh a double diploma is also granted. The fee for this, as for the similar double diploma in Edinburgh (Professional Examinations only), is 16*l*.

The King and Queen's College of Physicians in Ireland grants a license in medicine, and also a license in midwifery. A four-year's course of medical study is required, and a special additional examination for the midwifery qualification. The fee for the license in medicine, 15 guineas; for the midwifery diploma, 3 guineas; or, if both are taken out together, 16*l*.

The Royal College of Surgeons in Ireland grants *Letters Testimonial* and Fellowship. For the former a Preliminary Examination and the usual medical course is required, the total of the fees being 26*l*. 15*s*. For Fellowship the B.A. or an equivalent examination is demanded as preliminary, and a longer course of study. The fee is 47*l*. 5*s*. if the candidate intends to practise within ten miles of Dublin, or 36*l*. 15*s*. otherwise.

The Society of Apothecaries, London, grants a certificate of qualification to practise as an Apothecary, and requires that the candidate shall produce testimonials of having passed a Preliminary Examination in Arts, as a test of general education. Or having served an apprenticeship or pupillage of not less than five years to a practitioner qualified by the Act of 1815. This period may include the time spent in attending lectures and hospital practice. Or having attained the full age of twenty-one years. Of good moral conduct. And of having pursued a course of medical study in conformity with the regulations of the Court. The course of study includes three winter sessions and two summer sessions. The extent of the examinations is modified towards gentlemen holding the diplomas of other examining bodies. The Society also grants a certificate of qualification to

act as an assistant, the examination comprising the following subjects:—In translating physicians' prescriptions in the British Pharmacopœia; in Pharmacy, Pharmaceutical Chemistry, and Materia Medica. *Fees*.—For a certificate of qualification to practise, six guineas, the half to be paid at the first examination; for an assistant's certificate, two guineas.

The Apothecaries' Hall of Ireland. *Professional Education and Examination*.—Every candidate for the license to practise must produce certificates to the following effect:—1. Of having passed an examination in Arts, previously to entering on professional study. 2. Of being registered as a Student in Medicine. 3. Of being at least twenty-one years of age, and of good moral character. 4. Of apprenticeship to a qualified apothecary, or of having been engaged in Practical Pharmacy with an apothecary for three years subsequently to having passed the examination in Arts. 5. Of having spent four years in professional study. 6. Of having attended the following courses—viz., Chemistry, during one winter session; Anatomy and Physiology, during two winter sessions; Demonstrations and Dissections, during two winter sessions; Botany and Natural History, during one summer session; Practical Pharmacy and Practical Chemistry (in a recognised laboratory), each during three months; Principles and Practice of Medicine and Therapeutics, during one winter session; Midwifery and Diseases of Women and Children, during six months; Practical Midwifery at a recognised hospital (attendance upon twenty cases); Surgery, during one winter session; Medical Jurisprudence, during one summer session; instruction in the practice of Vaccination. 7. Of having attended at a recognised hospital or hospitals the Practice of Medicine and Clinical Lectures on Medicine, during two winter and two summer sessions; also the Practice of Surgery and Clinical Lectures on Surgery during one winter and one summer session. The examinations are divided into two parts, the first part comprehending Chemistry, Botany, Anatomy, Physiology, and Pharmacy; the second, Medicine, Therapeutics, Surgery, Pathology, Midwifery, Forensic Medicine, and Hygiene.

Candidates for the certificate of Assistant to an Apothecary in Ireland, in compounding and dispensing medicine, are examined in the British Pharmacopœia and in Pharmacy, scientific and practical, including the history, characters, and qualities of medicines, with their preparations and doses, and in the translation of Latin prescriptions. Neither the Arts certificate nor the certificate of Apprentice is required for the examination of Assistant.

DENTAL DIPLOMAS.

The Royal College of Surgeons grants a diploma in dental surgery (L.D.S.), which may be taken apart from the Diploma of Member of the College of Surgeons. The preliminary examination is not stipulated for, but candidates must produce Certificates:—

1. Of being 21 years of age.
2. Of having been engaged during four years in the acquirement of professional knowledge.
3. Of having attended at a School or Schools recognised by this College, not less than one of each of the following Courses of Lectures, delivered by Lecturers recognised by this College, namely:—Anatomy, Physiology, Surgery, Medicine, Chemistry, and Materia Medica.
4. Of having attended a second Winter Course of Lectures on Anatomy, or a course of not less than twenty Lectures on the Anatomy of the Head and Neck, delivered by Lecturers recognised by this College.
5. Of having performed Dissections at a recognised School during not less than nine months.
6. Of having completed a course of Chemical Manipulation, under the superintendence of a Teacher or Lecturer recognised by this College.
7. Of having attended at a recognised Hospital or Hospitals in the United Kingdom the Practice of Surgery and Clinical Lectures on Surgery during two winter sessions.
8. Of having attended at a recognised School two Courses of Lectures upon each of the following subjects, viz.:—Dental Anatomy and Physiology (Human and Comparative), Dental Surgery, Dental Mechanics, and one Course of Lectures on Metallurgy, by Lecturers recognised by this College.

9. Of having been engaged, during a period of not less than three years, in acquiring a practical familiarity with the details of Mechanical Dentistry, under the instruction of a competent Practitioner.
10. Of having attended at a recognised Dental Hospital, or in the Dental department of a recognised general Hospital, the practice of Dental Surgery during the period of two years.

N.B.—The Students of the London Schools are required to register the above Certificates at this College; and special Returns will be required from the Provincial Schools.

Examination.—The examination is partly written and partly oral.

The written examination comprises General Anatomy and Physiology, and General Pathology and Surgery, with especial reference to the practice of the Dental profession.

The oral practical examination comprises the several subjects included in the curriculum of professional education, and is conducted by the use of preparations, casts, drawings, &c.

Members of the College, in the written examination, will only have to answer those questions set by the Section of the Board, consisting of persons skilled in Dental Surgery; and in the oral examination will be examined only by that Section.

A candidate whose qualifications shall be found insufficient will be referred back to his studies, and will not be admitted to re-examination within the period of six months, unless the Board shall otherwise determine.

Examinations will be held in January and June.

The fee for the Diploma is ten guineas, over and above any stamp duty.

MEDICAL EDUCATION.

Subjoined is a list of the chief medical schools at which the required course of instruction can be obtained. It will be observed that instead of naming the fees for each class separately we have given in each case the composition fee which is accepted by the school for the entire course if paid in one sum. There are generally a few trifling additional expenses, such as subscription to library, &c.

ST. BARTHOLOMEW'S.

This great and ancient hospital, situated in the very heart of the metropolis, comprises in all a service of 710 beds, thus divided:—Medical cases, 227; surgical, 322; eye diseases, 26; women's diseases, 20; syphilitic, 81; and convalescent (at Highgate), 34. In this hospital resident pupils are received under certain conditions, particulars of which are to be obtained from NORMAN MOORE, M.D., Warden. Non-resident pupils can also dine in the hall with the rest if they choose. The Composition Fee here is 100 guineas, or 105 guineas if paid in three instalments. Students of dental surgery may take the necessary courses for a fee of 50 guineas. In the year 1875 relief was afforded to 6,000 in-patients, and 143,000 out-patients, besides women attended in their confinements at their own homes. The staff is thus composed:—

Consulting Physicians—Sir G. BURROWS, Bart., D.C.L., F.R.S.; Dr. FARRE; Dr. HARRIS.

Consulting Surgeon—Sir J. PAGET, Bart., D.C.L., F.R.S.

LECTURERS.

Medicine	Dr. Black, Dr. Andrew
Clinical Medicine	{ Dr. Black, Dr. Andrew Dr. Southey, Dr. Church
Surgery	{ Mr. Savory, F.R.S. Mr. Callender, F.R.S.
Clinical Surgery	{ Mr. Holden, Mr. Savory, F.R.S. Mr. Callender, F.R.S. Mr. Thomas Smith
Descriptive and Surgical Anatomy..	Mr. Thomas Smith, Mr. Langton
General Anatomy and Physiology ..	Mr. Morratt Baker
Histology	Dr. Klein, F.R.S.
Chemistry and Practical Chemistry..	Dr. Russell, F.R.S.
Materia Medica.....	Dr. Brunton, F.R.S.
Forensic Medicine and Hygiene	Dr. Southey
Midwifery and the Diseases of Women and Children	Dr. Greenhalgh
Botany.....	Rev. George Henslow
Pathological Anatomy	Dr. Gee
Comparative Anatomy	Dr. Moore
Ophthalmic Medicine and Surgery ..	Mr. Power
Dental Anatomy and Surgery	Mr. Coleman
Mental Diseases.....	Dr. Claye Shaw

DEMONSTRATIONS.

Morbid Anatomy	Dr. Wickham Legg
Diseases of the Skin.....	Mr. Morratt Baker
Orthopædic Surgery	Mr. Willett
Diseases of the Ear	Mr. Langton

Diseases of the Eye	Mr. Vernon
Practical Surgery.....	Mr. Marsh
Diseases of the Larynx	Dr. Brunton, F.R.S.
Practical Anatomy and Operative Surgery	{ Mr. Cumberbatch, Mr. Walsham (Assistant Demonstrators—Mr. Cripps, Mr. Keetley)
Mechanical and Natural Philosophy	Mr. Graham
Practical Physiology	Dr. Shuter
Chemistry	Dr. Armstrong, F.R.S.
Medical Tutor—Dr. Moore.	

CHARING CROSS HOSPITAL SCHOOL OF MEDICINE.

The introductory lecture will be delivered on October 2, at 4 P.M., by
Dr. J. MITCHELL BRUCE.
Aggregate fee, 78*l.* 5*s.*

LECTURERS.

Anatomy.....	Edward Bellamy, F.R.C.S.
Botany	Dr. Saunders
Chemistry	{ C. W. Heaton, F.C.S.
Practical Chemistry	{ Demonstrator, T. Bolas, F.C.S.
Clinical Medicine	Alexander Silver, M.A., M.D.
Clinical Surgery	H. Hancock, F.R.C.S.
Comparative Anatomy	J. F. Blake, M.A.
Demonstrations and Dissections	J. Cantlie, M.A., M.B.
Dental Surgery	John Fairbank, M.R.C.S.
Diseases of Children	J. Pearson Irvine, B.A., B.Sc., M.D.
Forensic Medicine	G. Vivian Poore, M.D.
Materia Medica and Therapeutics ..	R. Douglas Powell, M.D., F.R.C.P.
Mental Diseases	W. J. Hunt, M.D.
Morbid Histology	J. Mitchell Bruce, M.A., M.D.
Operative Surgery	Edward Bellamy, F.R.C.S.
Pathology and Morbid Anatomy....	T. Henry Green, M.D., F.R.C.P.
Physiology, Theoretical and Practical	{ Alexander Silver, M.A., M.D. J. Mitchell Bruce, M.A., M.D.
Practical Chemistry	C. W. Heaton, F.C.S.
Principles and Practice of Medicine	A. J. Pollock, M.D., F.R.C.P.
Principles and Practice of Midwifery and Diseases of Women	{ J. Watt Black, M.A., M.D.
Principles and Practice of Surgery..	Edwin Canton, F.R.C.S.
Public Health	{ C. W. Heaton, F.C.S. Dr. Irvine W. Eassie, C.E.
Skin Diseases.....	Dr. Sangster
Surgical Pathology	J. Astley Bloxam, F.R.C.S.
Francis Hird, F.R.C.S., Dean. G. V. Poore, M.D., Sub-Dean.	

ST. GEORGE'S.

This Hospital contains 353 beds. All the Medical Appointments, including those of House Physician, House Surgeon, Clinical Clerks and Dressers, are open to the Pupils of the Hospital, without additional fee or expense of any kind. These Offices are awarded after examination.

The Composition Fee here is 100 guineas, exclusive of Practical Chemistry. The requisite course for the Dental Diploma only costs 45*l.* (also exclusive of Practical Chemistry). The following are the staff:—

Consulting Physicians—Dr. WILSON; Dr. PITMAN.

Consulting Surgeons—Mr. CÆSAR HAWKINS, F.R.S.; Mr. TATUM; Mr. PRESCOTT HEWETT, F.R.S.

LECTURERS.

Clinical Medicine	Drs. Ogle, Wadham, and Dickinson
Midwifery and Diseases of Women ..	Dr. Barues
Clinical Surgery	Messrs. Holmes, Rouse and Pollock
Principles and Practice of Physic ..	Dr. Barclay
Principles and Practice of Surgery ..	Mr. Holmes
Pathology	Dr. Dickinson
Ophthalmic Surgery	Mr. Brudenell Carter
Descriptive and Surgical Anatomy ..	Mr. Piek
Physiology and General Anatomy ..	Dr. Cavafy
Physiological Chemistry.....	Dr. Ralfe
Histology	Mr. Herbert Watney
Chemistry and Physics	Dr. Noad
Morbid Anatomy	Dr. R. J. Lee
Medical Jurisprudence	Dr. Wadham
Psychological Medicine	Dr. Blandford
Practical Surgery	Mr. Haward
Dental Surgery	Mr. Vasey
Aural Surgery	Mr. Dalby
Materia Medica.....	Dr. Dickinson
Botany.....	Dr. Whipham
Comparative Anatomy	Dr. Brailey
Clinical Demonstrations of Diseases of the Skin	Dr. Whipham
Dean—Dr. Wadham.	

GUY'S.

Guy's Hospital, which dates from 1724, is another of the endowed hospitals of the metropolis. It was founded by Thomas Guy, a bookseller of London, who started in business in 1668 with a capital of 200*l.* It now contains accommodation for 690 patients. The total Composition Fee for lectures and hospital practice amounts to 100 guineas.

Consulting Physicians—Sir WM. GULL, Bart., M.D., F.R.S.; G. OWEN REES, M.D., F.R.S.

Consulting Surgeons—J. HILTON, F.R.S.; E. COCK, Esq.

LECTURERS.

Medicine	Dr. Habershon, Dr. Wilks
Clinical Medicine	{ Dr. Habershon, Dr. Wilks Dr. Pavy, Dr. Moxon, Dr. Pagge Dr. Pye-Smith, Dr. F. Taylor
Surgery	Mr. Bryant, Mr. Arthur Durham

Clinical Surgery	Mr. Forster, Mr. Bryant Mr. Durham, Mr. Howso Mr. Davies-Colley, Mr. Jacobson Mr. Clement Lucas Mr. Golding-Blrd
Anatomy, Descriptive and Surgical..	Mr. Howse, Mr. Davies-Colley
Physiology and General Anatomy ..	Dr. Pavy and Dr. Pye-Smith
Clinical Lectures on Midwifery and Diseases of Women	Dr. Braxton Hicks, Dr. A. L. Galabin
Chemistry	Dr. Debus, Dr. Stevenson
Experimental Philosophy	Prof. A. W. Reinold
Materia Medica and Therapeutics ..	Dr. Moxon
Medical Jurisprudence.....	Dr. Alfred S. Taylor
Ophthalmic Surgery.....	Mr. Bader
Pathology	Dr. Fagge
Hygiene	Dr. F. Taylor
Mental Diseases.....	Dr. Savage
Botany.....	Dr. Stokoe
Dental Surgery	Mr. Moon

KING'S COLLEGE, LONDON.

Introductory lecture on October 2, at 4 P.M., by Professor BAXTER, M.D.
Aggregate fee, 100l.

PROFESSORS.

Anatomy, Descriptive and Surgical	John Curnow, M.D.
Physiology.....	} Gerald F. Yeo, M.D.
Practical Physiology	
Chemistry	} C. L. Bloxam, F.C.S.
Practical Chemistry	
Medicine, Principles and Practice of	Dr. Beale, M.D., F.R.S.
Surgery, Principles and Practice of	John Wood, F.R.S.
Clinical Surgery	Sir William Fergusson, Bart., F.R.S.
Hygiene	W. A. Guy, M.B., F.R.S.
Botany	Robert Bentley, F.L.S.
Materia Medica and Therapeutics ..	E. B. Baxter, M.D.
Obstetric Medicine and the Diseases of Women and Children.....	} W. Playfair, M.D.
Forensic Medicine	
Comparative Anatomy	D. Ferrier, M.A., M.D.
Pathological Anatomy	A. H. Garrod, M.A.
Dental Surgery	Dr. Duffin
Ophthalmology	S. Hamilton Cartwright, M.R.C.S.
Psychological Medicine	J. Soelberg Wells, M.D., F.R.C.S.
	Edgar Sheppard, M.D.

Dean of the Faculty, Professor Bentley, F.L.S.
Sub-dean and Medical Tutor, J. H. Philpot, B.M.

THE LONDON HOSPITAL.

The London Hospital dates from the year 1740. Situated in a densely populated district at the East End of London, near docks, factories, and workshops, it is probably one of the largest accident hospitals in the world. During 1875 the total of the accident cases was 9,389, of which 2,219 were admitted into the wards. During the same year the total of the cases treated numbered 5,804 indoor and 40,717 outdoor patients. The London Hospital, with its new wing lately opened, comprises 800 beds. The total Composition Fee here is 100 guineas, with about 7 guineas extra for Chemistry, Pharmacy, and Library. For Dental Students only 40 guineas. We subjoin the staff:—

Consulting Physician—Dr. HERBERT DAVIES.
Consulting Surgeons—Mr. LUKE, F.R.S.; Mr. JOHN ADAMS; Mr. CURLING, F.R.S.

LECTURERS.

Medicine	{ Herbert Davies, M.D. Cantab. S. Fenwick, M.D.
Surgery	
Descriptive and Surgical Anatomy..	John Couper, F.R.C.S. Eng.
Practical Anatomy	Walter Rivington, M.S. Lond.
Chemistry	H. S. Wilson, M.A. Cantab., M.D.
Physiology and General Anatomy ..	C. Meymott Tidy, M.B.
Practical Histology and Use of the Microscope	{ J. McCarthy, M.B. Lond., F.R.C.S. Eng.
Comparative Anatomy	
Anatomy and Pathology of the Teeth	J. McCarthy, M.B. Lond., F.R.C.S.
Midwifery and Diseases of Women..	E. B. Aveling, D.Sc.
Ophthalmic Surgery.....	{ A. W. Barrett, M.B. Lond., M.R.C.S. Eng.
Forensic Medicine: Toxicology	
Do. Medical Jurisprudence and Public Health	James Palfrey, M.D.
Materia Medica and General Thera- peutics.....	John Couper, F.R.C.S. Eng.
Botany.....	J. E. D. Rodgers, M.R.C.S. Eng.
Practical Surgery.....	{ C. Meymott Tidy, M.B. M. Prosser James, M.D.
Pathology and Demonstrations of Morbidity Anatomy	
Diseases of the Throat and Use of the Laryngoscope.....	John Gilbert Baker, F.L.S.
	C. F. Maunders, F.R.C.S. Eng.
	H. G. Sutton, M.B. Lond.
	Morell Mackenzie, M.D. Lond.

Secretary—R. Kershaw, M.R.C.S. Eng.

An introductory address will be delivered on October 2, at 3 P.M., by ANDREW CLARK, M.D., Senior Physician to the Hospital.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, PADDINGTON.

The introductory lecture by Dr. WILTSHIRE, October 2, 1876, at 3.30 P.M., to be followed by a Conversazione in the School.
Aggregate fee, £84.

LECTURERS.

Consulting Officers	{ Dr. Chambers Sir James Alderson, M.D., F.R.S. Dr. Sibson, F.R.S. Mr. Coulson Mr. Lane Mr. White Cooper

Physicians	{ Dr. H. Jones, F.R.S. Dr. Sleveking Dr. Broadbent Dr. Cheddle Dr. Lawson Dr. Shepherd
Assistant Physicians	
Surgeons	{ Mr. Spencer Smith Mr. Haynes Walton Mr. J. R. Lane Dr. Jones Mr. Page Mr. Edmund Owen
Assistant Surgeons	
Physician-Accoucheur.....	Dr. Alfred Meadows
Assistant Physician-Accoucheur	Dr. Wiltshire
Surgeon in charge of the Ophthalmic Department	Mr. Haynes Walton
Aural Surgeon	Mr. G. Field
Surgeon-Dentist	Mr. Howard Hayward
Medical Tutor	Dr. Mahomed (Dr. Wright Dr. Randall Mr. Mivart, F.R.S. Dr. Trimen Dr. Farquharson
Other Lecturers.....	

THE MIDDLESEX HOSPITAL MEDICAL COLLEGE.

Introductory address, October 2, at 3 P.M., by
Dr. G. H. EVANS.

Aggregate fee, £90.

LECTURERS.

Medicine	Dr. Greenhow, F.R.S.
Surgery	Mr. Hulke, F.R.S.
Practical Surgery.....	{ Mr. Lawson Mr. Morris, M.A., M.B. Lond.
Physiology and General Anatomy....	
Descriptive and Surgical Anatomy..	Mr. B. Thompson Lowne
Chemistry	Mr. Morris, M.A., M.B.
Pathological Anatomy.....	Mr. W. Fowler
Diseases of Women and Children and Midwifery	Dr. Cayley
Diseases of the Eye	Dr. J. Hall Davis
Dissecting Room	Mr. Critchett
Materia Medica and Therapeutics ..	Mr. Hensman
Medical Jurisprudence	Dr. Thorowgood
Botany.....	Dr. R. King, M.A. Cantab.
Practical Chemistry	Mr. Hensman
Public Health	Mr. W. Foster
Comparative Anatomy and Zoology	Dr. G. H. Evans, M.A. Cantab.
Psychological Medicine	Mr. Hensman
Practical Demonstrations on Diseases of the Skin.....	Dr. Henry Rayner
Diseases of the Larynx and Ear	Dr. G. H. Evans Mr. A. Clark

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.

Introductory address on October 2, at 4 P.M., by Mr. FRANCIS MASON.
Aggregate fee, £105.

LECTURERS.

Medicine	{ Dr. Bristow. Dr. Murchison
Surgery	
General Pathology	{ Mr. Sydney Jones Mr. MacCormac
Physiology and Practical Physiology	
Descriptive Anatomy	Dr. Payne
Anatomical Demonstrations in the Dissecting Room	{ Dr. Ord Dr. John Harley Mr. Francis Mason Mr. W. W. Wagstaffe Dr. R. W. Reid Mr. Rainey
Special Anatomical and Microscopical Demonstrations.....	
Practical and Manipulative Surgery	Mr. Ralney
Chemistry and Practical Chemistry	{ Mr. Croft Mr. MacKellar
Midwifery	
Physics and Natural Philosophy....	Dr. A. J. Bernays
Materia Medica	Dr. Gervis
Forensic Medicine.....	Dr. Stone
Comparative Anatomy.....	Dr. Stone
Ophthalmic Surgery.....	Mr. C. Stewart
Botany.....	Mr. Liebreich
Dental Surgery	Mr. A. W. Bennett
Demonstrations of Morbid Anatomy	{ Mr. J. W. Elliott Mr. W. G. Ranger
Lectures on Morbid Anatomy and Practical Pathology.....	
Mental Diseases.....	Dr. Greenfield
Dean.....	Dr. Wm. Rhys Williams
Medical Secretary.....	T. B. Peacock, M.D. R. G. Whitfield

UNIVERSITY COLLEGE, LONDON.

Introductory lecture on Monday, October 2, at 3 P.M., by Professor MAUDSLEY, M.D.

Aggregate fee, 105l. 15s.

PROFESSORS.

Medicine	J. Russell Reynolds, M.D., F.R.S.
Physiology	Burdon Sanderson, M.D., F.R.S.
Chemistry	Edward A. Schüfer Prof. Williamson, Ph.D., F.R.S. C. Graham, D.Sc.

Anatomy.....	G. Viner Ellis
Comparative Anatomy	Prof. Lankester, M.A., F.R.S.
Surgery	Prof. Marshall, F.R.S.
Practical Surgery.....	Berkeley Hill, M.B., F.R.C.S.
Dental Surgery	G. A. Ibbetson, F.R.C.S.
Botany.....	Prof. Oliver, F.R.S.
Midwifery	Grailly Hewitt, M.D.
Pathological Anatomy	H. C. Bastian, M.A., M.D., F.R.S.
Medical Jurisprudence	Prof. Maudsley, M.D.
Materia Medica and Therapeutics ..	Sidney Ringer, M.D.
Mental Diseases.....	W. H. O. Sankey, M.D.
Ophthalmics	Wharton Jones, F.R.S.
Hygiene and Public Health	Prof. Corfield, M.A., M.D.

QUEEN'S COLLEGE, BIRMINGHAM.

MEDICAL DEPARTMENT.

Students study here for the medical profession in connection with the General and Queen's Hospitals, Birmingham. The college fees, paid in one sum, amount to 50 guineas, and the hospital fees to 30 guineas. The professors are as follows:—

Medicine	Balthazar Foster, M.D., F.R.C.P.
Surgery	{ Oliver Pemberton, F.R.C.S. Edin. Furneaux Jordan, F.R.C.S.
Anatomy.....	{ W. Thomas, M.B. Lond., F.R.C.S. R. Jolly, M.D., F.R.C.S. Edin.
Physiology	{ Richard Norris, M.D. T. H. Bartlett, M.B. Lond., F.R.C.S.
Pathology	{ E. Rickards, M.A., M.B. Oxon., M.R.C.P.
Chemistry	{ James Sawyer, M.D. Lond., M.R.C.P. A. C. Bruce, M.A., F.C.S.
Demonstrators of Anatomy	{ Bennett May, M.B., B.S. Lond., F.R.C.S.
Midwifery	{ G. H. Evans, F.R.C.S. John Clay, M.R.C.S.
Diseases of Women and Children....	{ John Bassett, M.D. Samuel Berry, F.R.C.S.
Forensic Medicine.....	{ R. C. R. Jordan, M.D. Lond.
Botany	{ J. St. S. Wilders, M.R.C.S.
Materia Medica and Therapeutics ..	{ William Hinds, M.D., M.R.C.S.
Ophthalmic Surgery.....	{ Edward Mackey, M.D. Lond., M.R.C.P.
Dental Surgery.....	{ J. Vose Solomon, F.R.C.S.
Comparative Anatomy	{ Thomas Howkins, M.R.C.S.
Registrar.....	{ Thomas Savage, M.D., F.R.C.S.
	{ Robert Jolly, M.D., F.R.C.S. Edin.

BRISTOL SCHOOL OF MEDICINE.

Aggregate fee, 55 guineas (exclusive of hospital practice).

PROFESSORS.

Medicine.....	William H. Spencer, M.B.
Surgery and Practical Surgery.....	{ Robert W. Coe, F.R.C.S. Robert W. Tibbits, M.B., M.R.C.S.
Anatomy	{ Dr. Waldo Nelson C. Dobson, F.R.C.S.
Physiology	{ George F. Atchley, M.B., M.R.C.S.
Chemistry	{ R. Shingleton Smith, M.D.
Midwifery	{ Thomas Coomber, F.C.S.
Medical Jurisprudence	{ Joseph G. Swayne, M.D.
Materia Medica and Therapeutics ..	{ William P. Keall, L.R.C.P. Ed., M.R.C.S.
Botany	{ George F. Burder, M.D., F.R.C.P.
Pathological Anatomy	{ Mr. Adolph Leipner
Comparative Anatomy	{ William H. Spencer, M.B.
	{ George F. Atchley, M.B., M.R.C.S.

SCHOOL OF SURGERY (DUBLIN).

(In connection with the Royal College of Surgeons.)

The usual Winter Course will commence on Monday, October 30. Dr. W. Stokes will deliver an Introductory Lecture at 1 o'clock on that date. The Composition Fee at this school for all lectures and dissections required for the Irish Diploma in Surgery is 55l. 2s. 6d.

LECTURERS.

Anatomy and Physiology	Dr. Mapother
Descriptive Anatomy	{ Dr. Bevan Mr. Thornley Stoker
Surgery	{ Mr. J. Stannus Hughes Mr. Stokes
Practice of Medicine	Dr. James Little
Chemistry	Dr. Cameron
Midwifery	Dr. Cronyn
Materia Medica	Mr. Macnamara
Medical Jurisprudence	Dr. Davy
Botany	Dr. Minchin
Hygiene	Dr. Cameron
Ophthalmic and Aural Surgery.....	Mr. Wilson

SCHOOL OF MEDICINE, EDINBURGH.

The minimum cost of the Education in this School of Medicine for the double qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons, including the Fees for the joint examination, is 90l. 4s. which is payable by yearly instalments during the period of study; whilst the minimum cost for the single qualification of either Physician or Surgeon, including fee for examination, is 80l.

Secretary, STEVENSON MACADAM.

The Inaugural Address of the forthcoming Session will be delivered by Dr. WYLLIE, on Tuesday, October 31, at 11 o'clock.

Lectures commence on Wednesday, November 1. The Practical Anatomy Rooms and Chemical Laboratories open on Monday, October 2.

LECTURERS.

Anatomy.....	Dr. P. D. Handyside
Chemistry	{ Dr. Stevenson Macadam Mr. J. Falconer King
Materia Medica and Therapeutics ..	{ Dr. Francis W. Moinet Dr. Win. Craig
Surgery	{ Dr. P. H. Watson Mr. Joseph Bell Mr. Chiene Dr. John Duncan
Midwifery and Diseases of Women and Children	{ Dr. Matthews Duncan Dr. Kellier Dr. Angus Macdonald Dr. Underhill
Institutes of Medicine or Physiology	Dr. McKendrick
Clinical Medicine	{ Dr. Rutherford Haldane Dr. George W. Balfour Dr. Grainger Stewart
Clinical Surgery	{ Dr. P. H. Watson Mr. Annandale
Medical Jurisprudence and Public Health	Dr. Littlejohn
Practice of Physic.....	{ Dr. Rutherford Haldane Dr. Claud Muirhead Dr. Grainger Stewart
Natural History—Zoology and Com- parative Anatomy	Dr. Andrew Wilson
General Pathology and Pathological Anatomy	Dr. John Wyllie
Diseases of the Ear	Dr. Kirk Duncanson
Vaccination	Dr. Husband
Diseases of Children.....	Dr. R. Peel Ritchie
Diseases of the Eye	Dr. Argyll Robertson
Insanity	Dr. J. Batty Tuke
Syphilology	Dr. Cadell
State Medicine and Hygiene	Dr. Andrew Smart

THE LEEDS SCHOOL OF MEDICINE.

The Composition Fee for the full course of School Lectures and Classes here is 44 guineas. The fees for three years' Medical and Surgical Practice at the hospital amount to 42l. Dr. Eddison, 29 Park Square, Leeds, is secretary and registrar. The introductory address will be delivered on October 2, at 3.30 P.M., by Robert T. Land, M.D. The teachers and lecturers at the school are as follows:—

Descriptive Anatomy	{ Robert T. Land, M.D., M.R.C.S. John A. Nunneley, M.B., M.R.C.S. Edmund Robinson, M.R.C.S. Edmund Robinson, M.R.C.S.
Demonstrations of Anatomy	{ A. F. McGill, F.R.C.S. W. A. M. Robson, M.R.C.S.
General Anatomy and Physiology ..	{ C. J. Wright, M.R.C.S.
Practical Physiology.....	{ John Horsfall, M.A., F.R.C.S.
Chemistry (at the Yorkshire College of Science)	{ James Walker, M.R.C.S., L.R.C.P. Professor T. E. Thorpe, Ph.D., F.R.S.
Botany	Frederick Greenwood, M.R.C.S.
Materia Medica	John Edwin Eddison, M.D.
Pathology	{ A. F. McGill, F.R.C.S. John D. Heaton, M.D., F.R.C.P.
Medicine	{ T. Clifford Allbutt, M.A., M.D. J. D. Heaton, M.D., F.R.C.P.
Clinical Medicine	{ T. Clifford Allbutt, M.A., M.D. John Edwin Eddison, M.D.
Surgery (including the Practical Course)	{ T. R. Jessop, F.R.C.S. Edward Atkinson, M.R.C.S., F.L.S. C. G. Wheelhouse, F.R.C.S.
Clinical Surgery	{ T. P. Teale, M.A., F.R.C.S. T. R. Jessop, F.R.C.S. Edward Atkinson, M.R.C.S.
Midwifery	{ W. N. Price, M.R.C.S. James Braithwaite, M.D., M.R.C.S.
Forensic Medicine.....	Thomas Scattergood, M.R.C.S.
Mental Diseases.....	Herbert C. Major, M.D.
Comparative Anatomy	{ T. Clifford Allbutt, M.A., M.D. Edward Atkinson, M.R.C.S., F.L.S.

LIVERPOOL INFIRMARY SCHOOL OF MEDICINE.

The terms here are—For Lectures and Demonstrations, 45 guineas; and for Hospital Practice, 32 guineas. Extras amount to about 11 guineas. The following are the lecturers:—

Medicine	A. T. H. Waters, M.D.
Surgery	Reginald Harrison, F.R.C.S.
Physiology	Richard Caton, M.D.
Anatomy	W. Mitchell Banks, F.R.C.S.
Pathology	A. Davidson, M.A., M.D.
Ophthalmology	T. Shadford Walker, M.R.C.S.
Chemistry	J. C. Brown, D.Sc. (Lond.)
Obstetric Medicine	{ A. B. Steele, L.K.Q.C.P.
Diseases of Children	{ R. Gee, M.D.
Materia Medica	J. B. Nevins, M.D.
Medical Jurisprudence and Toxi- cology	{ Ewing Whittle, M.D. J. C. Brown, D.Sc. (Lond.)
Botany	W. Carter, L.L.B., M.B.
Comparative Anatomy	E. H. Dickenson, M.A., M.B.
Dental Surgery	J. Snape, L.D.S., R.C.S.
Dental Mechanics	R. E. Stewart, L.D.S., R.C.S.

UNIVERSITY OF EDINBURGH.

The Session will be opened on Tuesday, October 31, 1876, at 2 P.M., when an address will be delivered by the Principal, Sir ALEXANDER GRANT, Bart., LL.D.

FACULTY OF MEDICINE.

Materia Medica	Prof. Sir Robert Christison, Bart., M.D.
Chemistry	Prof. Crum Brown, M.D.
Surgery	Prof. Spence
Institutes of Medicine or Physiology	Prof. Rutherford, M.D.
Midwifery and Diseases of Women and Children	Prof. Simpson, M.D.
Clinical Surgery (Mon. & Th.)	Prof. Lister, M.B.
Clinical Medicine (Mon., Th., Tu., & Fr.)	Prof. Laycock, MacLagan, and Sanders
Anatomy	Prof. Simpson, on Diseases of Women
Practice of Physic	Prof. Turner, M.B.
General Pathology	Prof. Laycock, M.D.
Anatomical Demonstrations	Prof. Sanders, M.D.
Botany	Prof. Turner
Natural History	Prof. Balfour, M.D.
	Prof. Sir Wyville Thompson

UNIVERSITY OF GLASGOW.

Introductory discourse by Professor M'CALL ANDERSON, M.D., on Tuesday, October 31.

PROFESSORS.

Clinical Medicine	Dr. M'Call Anderson
Clinical Surgery	Dr. Gairdner
Chemistry	Dr. G. Buchanan
Materia Medica	Dr. Macleod
Anatomy	Mr. Ferguson
Practice of Physic	Dr. Cowan
Surgery	Dr. A. Thompson
Institutes of Medicine	Dr. Gairdner
Forensic Medicine	Dr. Macleod
Midwifery	Dr. A. Buchanan
Pathology	Dr. P. A. Simpson
Zoology	Dr. Leishman
Botany	Dr. J. Coats
Lectures on the Eye	Dr. Young
	Dr. A. Dickson
	Dr. T. Reid

THE OWENS COLLEGE (MANCHESTER ROYAL) SCHOOL OF MEDICINE.

Introductory address by EDWARD LUND, Esq., F.R.C.S., on Monday, October 2, 1876, at 4 P.M.

Aggregate fee, 48l. (exclusive of hospital practice).

PROFESSORS AND LECTURERS.

Physiology	Prof. Arthur Gamgee, M.D., F.R.S.
Anatomy, Descriptive and Practical	Prof. Morrison Watson, M.D., F.R.S.E.
Comparative Anatomy	Prof. W. C. Williamson, F.R.S.
Chemistry	Prof. Henry E. Roscoe, B.A., Ph.D., F.R.S.
Organic Chemistry	Prof. G. Schorlemmer, F.R.S.
Clinical Medicine	Prof. William Roberts, M.D., F.R.C.P.
Principles and Practice of Medicine	Prof. J. E. Morgau, M.D., M.A. (Oxon.), F.R.C.P.
Principles and Practice of Surgery ..	Prof. George Southam, F.R.C.S.
General Pathology and Morbid Anatomy	Prof. Edward Lund, F.R.C.S.
Hospital Instruction	Henry Simpson, M.D. (Lond.)
Midwifery and Diseases of Women and Children	Julius Dreschfeld, M.D.
Materia Medica and Therapeutics ..	The Physicians and Surgeons to the Royal Infirmary
Forensic Medicine	John Thorburn, M.D.
Ophthalmology	Alexander Somers, M.R.C.S.
Botany	Daniel John Leech, M.B. (Lond.)
Hygiene and Public Health	G. Morley Harrison, M.R.C.S.
	Thomas Windsor, M.R.C.S.
	Prof. W. C. Williamson, F.R.S.
	Arthur Ransome, M.D., M.A. (Cantab.)
	Professor Gamgee, M.D., F.R.S., Dean of the Medical School.
	J. Beswick Perrin, M.R.C.S., F.L.S., Medical Tutor and Demonstrator of Anatomy.
	J. Holme Nicholson, Registrar.

SHEFFIELD SCHOOL OF MEDICINE.

Introductory address by Dr. JOHN YOUNG.

Aggregate fee, 40 guineas (exclusive of hospital practice.)

LECTURERS.

Anatomy, Descriptive and Surgical ..	Mr. Skinner
Demonstrations of Anatomy	Mr. E. Skinner
Physiology	Dr. E. Thomas
Principles and Practice of Medicine ..	Mr. O. Barber
Principles and Practice of Surgery ..	Dr. Dyson
Chemistry	Dr. O'Keefe
Dental Mechanics	Dr. De Bartolome
Practical Physiology	Dr. Hall
Midwifery and Diseases of Women ..	Mr. W. F. Favell
	Mr. A. Jackson
	Mr. Allen
	Dr. Merryweather
	Dr. W. R. Thomas
	Dr. Hime

Materia Medica and Therapeutics	Dr. Young
Medical Jurisprudence and Toxicology ..	Mr. Baker
Botany	Mr. Harrison
Dental Surgery	Mr. Birks
Comparative Anatomy	Dr. Merryweather
Demonstrations of Pathology and Microscopy	Mr. W. Jackson
Demonstrations of Operative Surgery ..	The House Surgeon of the Infirmary
	Mr. Favell

VETERINARY EDUCATION.

The session of the Royal Veterinary College, Camden Town, London, will commence on October 2, at 1 P.M., when Professor PRITCHARD will deliver an inaugural address. The course of lectures at this institution comprises:—Pathology of the Horse and other domesticated animals, including Epizootics, Parasites, and Parasitic Diseases; also on Materia Medica, Toxicology, Botany, Therapeutics, and Pharmacy, Hospital Practice, Obstetrics, Operative Surgery, the Principles and Practice of Shoeing, &c.

Students are required to attend one Summer and two Winter Sessions, at least, before being eligible for examination for the diploma of the Royal College of Veterinary Surgeons.

The general fee for the lectures, exclusive of Practical Chemistry, is 25l.

Professor SIMONDS, Principal.

THE NEW VETERINARY COLLEGE, GAY-FIELD, EDINBURGH.

PROFESSORS.

Veterinary Medicine and Surgery ..	Prof. Williams, F.R.S.E., M.R.C.V.S.
Anatomy	Prof. Vaughan, F.L.S., M.R.C.V.S.
Physiology	Prof. Young, M.D.
Chemistry and Toxicology	Dr. Stevenson Macadam, F.R.S.E.
Materia Medica, Therapeutics, and Practical Pharmacy	Prof. Johnstone, M.R.C.V.S.
Clinical Medicine and Surgery	The Principal, assisted by Mr. Johnstone

SCIENTIFIC EDUCATION.

ROYAL SCHOOL OF MINES,

JERMYN STREET, S.W.

The following courses are provided:—

Chemistry	E. Frankland, Ph.D., F.R.S.
Metallurgy	John Percy, M.D., F.R.S.
Natural History	T. H. Huxley, LL.D., F.R.S.
Mineralogy	Warrington W. Smyth, M.A., F.R.S.
Mining	A. C. Ramsay, LL.D., F.R.S.
Geology	T. M. Goodeve, M.A.
Applied Mechanics	Frederick Guthrie, Ph.D., F.R.S.
Physics	Rev. J. H. Edgar, M.A.
Mechanical Drawing	

The Lecture Fees for Students desirous of becoming Associates are 30l. in one sum, on entrance, or two annual payments of 20l., exclusive of the Laboratories.

Tickets to separate Courses of Lectures are issued at 3l. and 4l. each.

ROYAL COLLEGE OF SCIENCE, DUBLIN.

The following courses are provided:—

PROFESSORS.

Chemistry (Theoretical and Practical), Metallurgy, &c.	Prof. Galloway, F.C.S.
Mathematics, Mechanics, and Mechanism	Prof. Hennessy, F.R.S.
Drawing, Engineering, and Surveying	Prof. Pigot, C.E., M.R.I.A.
Experimental Physics	Prof. Barrett, F.R.S.E., F.C.S.
Geology	Prof. Hull, M.A., F.R.S.
Mining and Mineralogy	Prof. O'Reilly, C.E., M.R.I.A.
Agriculture	Prof. Davy, M.D., M.R.I.A.
Botany	Prof. McNab, M.D.
Zoology	Prof. Leith Adams, M.B., F.R.S.

THE YORKSHIRE COLLEGE OF SCIENCE, LEEDS.

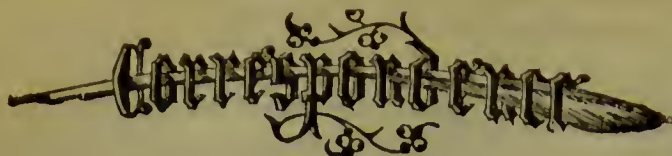
The Session will commence on October 3. Courses for Botany and Civil Engineering are now added to the lectures provided at this institution. Evening Classes are also held in the various subjects.

The following are the Professors at this Institution:—

Mathematics and Experimental Physics	Prof. A. W. Rücker, M.A.
Chemistry	Prof. T. E. Thorpe, Ph.D., F.R.S.E., F.C.S.
Geology and Mining	Prof. A. H. Green, M.A., F.G.S.
Biology	L. C. Miall, F.G.S.
Civil and Mechanical Engineering ..	(Messrs. F. Greenwood and J. Abbot, Demonstrators)
Textile Industries	Prof. G. F. Armstrong, M.A., F.G.S., C.E.
	John Beaumont

Besides the usual laboratory and lecture courses, evening classes are provided at very moderate fees in each of the above subjects.

Hon. Sec., RICHARD REYNOLDS, F.C.S.



LEX DIXIT.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Many retail chemists amongst your subscribers are so practically acquainted with the ruinous effects of co-operative stores on their trade that they would have been intensely interested had you published in your last number the reasons for the legal opinion that our representative body had better not meddle in the matter. Considering the gravity of the subject, there must be strong technical points to oppose, or something radically good in the principle of co operation itself. "Tantum commodum animis celestibus non sit."

The stores perform one praiseworthy function. They teach the public that cash and credit are no longer equivalent terms; and the honest trader should take the present opportunity of showing that his claims are distinct from those of the mere trade speculator. Co-operation should be examined, and, if good, accepted. When stores first started many wholesale firms opposed them, some supplied them, the retailer ignored them: the wholesale dealer remains unaffected, the retailer has found his system of trading dishonest. Wholesale and retail interests are no longer identical. It is an unpleasant office to point out to friends and benefactors that there are duties unfulfilled, sacrifices probably to be made for the good of the many; but circumstances command and we dare not hesitate. I submit, then, that members of the council should have only a retail interest, or no personal trade interest whatever, until such time as affairs now interfering with trade can be properly adjusted, for personal interest necessarily hampers execution. If the retail interest had been competently considered, encouragement for home laboratories would have supplemented the official requirements, and this, with a legalised tariff, and other enactments, would have secured us immunity from doctors, stores, and grocers. The dispensaries of the former would have been supplied by ourselves, and a mutual understanding delayed the evil day; in the others we should have found manageable enemies.

It is now too late to beat a retreat, and the next best thing is freely to discuss our position, and try not to hate one another in our common misfortunes.

It may be that both wholesale houses and drug departments of stores may become absorbed by the retail trade, for the good of the whole body of chemists and druggists, and with benefit to the present proprietors. There is every hope in medicine, and if we in our generation are unable to advance it to its proper position, and thereby secure the just rewards of all its followers, time will but prove our unworthiness.

I am, sir, yours truly,

August 24, 1876.

JOHN BARKER SMITH.

WORTH THE ATTENTION OF THE EXCISE.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—Your reference to a quotation of General Order issued by Inland Revenue, July 24, suggests the propriety of a question through your popular monthly.

How is it that in several small towns, situated in the counties of Antrim, Londonderry, and Tyrone, the article methylated sulphuric ether is so extensively used as a beverage?

This article is supplied to these localities by a sort of mongrel wholesale druggist, frequently adulterated with methylated spirits, and retailed by low public-houses.

The result of the use of this drink is frequently death or the county asylum for life! If, as an independent journal, you

would expose this unscrupulous and vile traffic, I believe you would confer a lasting favour on our fallen humanity by drawing public attention to a demoralising class of trade.

Respectfully yours,

W. D.

CHEMISTS' AND DRUGGISTS' TRADE ASSOCIATION.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—From the remarks of the editor in the *Pharmaceutical Journal* of August 26 many may be led to suppose that this association is not generally appreciated by the trade. We think the following goes a long way to prove the contrary. A short time since we called on our brethren in this town, soliciting subscriptions for the movement: with three exceptions all became annual subscribers, and in almost every case gave a donation as well. We also received cordial wishes for success, and were courteously thanked for going round and representing the matter. We would suggest that the same course be pursued in every town, which would ensure a strong and representative society.

FREDERICK TUNBRIDGE.

Reading: September 4, 1876.

JOSEPH NOAD.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Your earnest advocacy in favour of the newly-formed Chemists' Trade Association will be esteemed by all who have the general interests of the trade at heart. In certain quarters we are treated to diluted sneers at the smallness of our numbers. To these cold-water friends I would say, Wait awhile. My own experience is that the whole soul of the trade is with us. Time has permitted me only to call upon a few of those I know, but of these one and all expressed their best wishes for our success. Some handed me their donations and subscriptions to send with my own, and others promised to send direct. If a few of our more active friends would spare a little time to call on their neighbours we should at once have a large accession of strength, and much time would be saved to the secretary which must be spent in canvassing, as nothing but personal solicitation will move many of our brethren, who, though ever ready to grumble, are always slow to act.

As a loyal member of the Pharmaceutical Society, I am sorry to find a wide-spread feeling of dissatisfaction at the inaction of that society in matters affecting us as a trade. Some cannot see how the association is to work amicably with the society to our common benefit, and would readily support an association that was professedly antagonistic to the Pharmaceutical Society. This feeling I have endeavoured to combat, knowing that, although the Pharmaceutical Society has not done all we hoped for, yet it has done an important work, and I would respectfully urge upon all chemists to send their names at once as subscribers to the association, and as far as possible support the society too, and let all past differences be forgotten.

We should then as a trade possess a strength which union alone can give, and would thus command the respect, not only of those officials who are so prone to meddle with our interests, but of the House of Commons itself, at that time, which is surely approaching, when more poison regulations, or other meddlesome legislation, will call forth all our energy either to modify or oppose.

I am, sir, yours respectfully,

London: September, 1876.

GEORGE PATTISON.

THE CONCENTRATION OF SULPHURIC ACID.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Your readers will be grateful to you for enjoining brevity in any further correspondence on the above subject, and, for myself, I would not again trouble you or them were it not that Mr. Kessler's last communication demands notice, for,

although tacitly admitting his inability in *any one particular* to justify the statements of his former letters, which I have proved to be false, he now as a subterfuge endeavours to fabricate a charge of bad faith against us in respect of an apparatus erected experimentally some dozen years ago. In doing so he only confirms the case as against his supposed patent, and, as often happens, in endeavouring to bring about a false issue, he proves too much; he succeeds only in cutting the ground from under his own feet, for how can he in 1876 claim a patent for a *principle published in 1863*?

His present claim is for a leaden dome to platinum pans, and for certain modes of arrangement of such pans. He has demanded and received from those who are now using such arrangements *enormous royalties*, two to three times the legitimate value of the apparatus, such sums having been paid by the purchasers *under the belief that they were obliged to pay for such rights*, claimed, and by them supposed to be possessed, by Messrs. Faure & Kessler.

With regard to the *general form of arrangement*, of platinum vessels with basin-shaped bottom, exposed to the fire, set upon iron rings, and working singly or two or more in series, it is admitted that there can be no dispute: such arrangement was exhibited by us in 1862, has been in operation ever since, and at the above-mentioned date plans were furnished to the chief manufacturers. As to the *leaden dome*, we have before stated that it was in use in England many years ago, in cases where the cost of the plant was a great consideration. The paragraph, however, which Mr. Kessler himself quotes, published in the German edition of "Muspratt's Dictionary," entirely destroys the last vestige of any present claim made by Messrs. Faure & Kessler for a valid patent in 1876.

The paragraph runs as under:—

"*Platinum Apparatus with Leaden Dome.*—To lessen expense, to accelerate the concentration and to facilitate the cleansing of the apparatus, Messrs. Johnson, Matthey & Co. have constructed a leaden dome, which has been employed at the Griesheim Chemical Factory, &c."

This relates to the apparatus of 1863, the *circumstances connected with which* were fully detailed in my letter of July 12, and which was, as I stated, tried and abandoned, *but of the existence of this notice or its publication I was absolutely unaware* until Mr. Kessler brought it to light. We cannot be held responsible for the scribbles of dictionary contributors of whom we have never heard, any more than for the hallucinations or elastic consciences of Messrs. Faure & Kessler, who, although knowing the facts connected with this Griesheim affair—that it was a *bonâ fide* experiment, carried out *entirely at the expense* of my firm, the apparatus not being sold to the Griesheim Company, but simply erected and tried for us by them as a friendly matter, and returned to us at our own costs after its failure—yet for their own purposes of argument they endeavour to pervert its whole bearings on the case by deliberate misstatements.

From first to last this seems to have been their mode of action. They raised a cry that we had decried their process for our advantage, the fact being that its general adoption would, as a *mere matter of money making*, have been greatly to our profit. For a considerable time they flooded our customers with pamphlets and statements of a misleading character, endeavouring to injure our business, *yet we never* during that period noticed or troubled ourselves about them. Until they made their unfounded attacks upon us, we confined our action to answering such *direct and specific inquiries* as reached us from our own clients, stating in such replies the fact that we had no personal knowledge of the apparatus upon which we could recommend it—that its cost appeared to us greatly to exceed its value—and generally referring such inquirers for more direct information to the foreign acid manufacturers whom we know to have adopted it, and some of whom at least were working in Messrs. Faure & Kessler's interest as commission agents. As I have before stated, there was not a shadow of either jealousy or ill-feeling on our part against them, and when consulted by our customers we followed the only honourable course towards both parties.

Messrs. Faure & Kessler now endeavour to make capital out of the expression made use of by me, that it was a matter of indifference to us "at what price they (Faure & Kessler) sold their apparatus or their services," and ask "Where is Messrs. Johnson, Matthey & Co.'s pretended solicitude for their clients?" Let me point out that when a client *goes elsewhere* for his requirements he is no longer our customer, and that we can

scarcely be supposed to trouble ourselves as to whether or not he obtains value for his money. Mr. Kessler further alludes to what he calls a "stinging" remark made by the judge in the late trial, *Faure v. Wallace*, "You mean, Mr. Sellon, do you not, provided your house furnishes the platinum—for without that, according to your letter, the process is worth nothing at all?" This is *not* what he said, but I let that pass—in an exaggerated form it conveys the meaning of the remark. It is, however, for wiser heads than mine to realise either its application to the case, or its bearing in favour of Messrs. Faure & Kessler, for it so happened that the pans in question with which Mr. Wallace had unsuccessfully, and at such great loss, tried the F. & K. process, *had been furnished by us* at Mr. Wallace's and Mr. Kessler's joint request, and exactly in accordance with Mr. Kessler's own plans.

In closing this too lengthened correspondence I will only further refer to the last paragraph of Mr. Kessler's letter, to state that although he puts himself outside the pale of that consideration and friendliness which we have always been willing to accord to our opponents in business, yet the extent of our "waging war," as he calls it, against him will consist as hitherto in our refuting any more false and interested assertions such as he has lately indulged in whenever we consider that occasion requires it, assuring him that so long as he makes use of such weapons, neither our clients nor ourselves will accept him as a fit judge of our honour.

I am, sir, &c.,

JOHN S. SELLON.

(Of the firm of Johnson, Matthey & Co.)

September 6, 1876.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

[Translation.]

SIR,—We have the honour to hand you the following letter, dated August 30 last, from Messrs. James Muspratt & Sons, of Liverpool:—

Messrs. Faure & Kessler, Clermont-Ferrand.

DEAR SIR,—Having now worked your platinum basin for the concentration of sulphuric acid for a period of nearly nine months, we are able to certify as to its merits.

Our apparatus consists of only one basin, but with it we are able to concentrate three tons of acid per day from 100° to 167°–168°, with an average consumption of about 5 cwt. of small coal (slack) per ton of concentrated acid.

The repairs do not appear excessive, and we are at a loss to understand why your invention has not found as ready an introduction into England as on the Continent, where it is gradually superseding the old method of concentration.

We shall be glad to shew the apparatus at work to any who may be introduced by you, and to give them every information.

We remain yours truly,

JAMES MUSPRATT & SONS.

8 Hargreave's Buildings, Chapel Street, Liverpool:

August 30, 1875.

While taking advantage of the kind offer of Messrs. Muspratt we may mention that there are 32 other factories in various parts of the world which for the past three years have profited from our invention, each of which can furnish proofs of its value.

English industry alone has, until now, remained deprived of this benefit in consequence of its too great confidence in the house of Johnson, Matthey & Co., which does not fear to abuse its reputation in order to hinder this progress, and which seeks its own interest at the expense of the general prosperity.

We hope, however, that now at last a light will be thrown on the subject in the minds of your readers by the testimony of the firm so honourably known which we quote above, and that this too long dispute will now terminate.

FAURE & KESSLER.

Clermont-Ferrand: September 6, 1876.

[With the two letters printed above this discussion must end.—Ed. C. & D.]



For particulars of Advertisements, Subscriptions, &c., please refer to the first page of Literary matter. An Index to the Advertisements contained in this issue will be found in the front portion of the Journal.

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For confirmation of this assertion, see the opinions of such authorities as Dr. BARTLETT, Professor WANKLYN, and others, at page 82 in this Journal.

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L O N D O N .

The British Pharmaceutical Conference.

THIRTEENTH ANNUAL MEETING.

GLASGOW, SEPTEMBER 5 AND 6.

ONLY some fifteen hundred years ago, according to Gibbon, there dwelt on the spot where Glasgow now stands a valiant Caledonian tribe known as the Attacotti. This tribe was distinguished by one peculiarity; we trust a sufficient length of time has elapsed to allow us to refer to it without any breach of delicacy—they loved humanity. Whether they preferred him raw or roasted we are not certain, but we have no doubt that if the thirteenth annual meeting of the British Pharmaceutical Conference had been held in St. George's Square only 150 decades in advance of the moment when it actually occurred, some lady and gentleman might at this time have been taking their evening stroll on the banks of the Clyde, commenting as they picked their teeth on the superior qualities of their last slice of secretary. But if some of us have to mourn the loss of distant relatives eaten by the ancient Attacotti we must at least acknowledge the generous compensation made by their modern descendants. The pharmacutists of Glasgow, as they exhibited themselves last week to their Southern visitors, seemed almost willing, if need were, to be eaten themselves, if such a sacrifice should be found necessary to ensure the success of the meeting of the Pharmaceutical Conference in their handsome city. The zeal with which some dozen of them, at least, had devoted themselves to the perfection of the arrangements would have tempted success from the most unpropitious circumstances; but with everything in their favour, a society well organised, a famous and popular president, a good supply of local talent, and the noble Clyde at their back, it is not surprising that both in its scientific and social aspects this meeting of the Conference should have begun, continued, and ended in a continuous series of triumphs.

Everyone knew how admirably fitted was Professor Redwood for the post of president of this Conference. It is almost superfluous here to call over his qualifications. Professor Redwood is acknowledged throughout the country as an accomplished chemist, but his speciality is pre-eminently pharmacy. The Pharmacopœia is, to a great extent, his own work. His thorough familiarity with practical pharmacy, combined with a power of lucid expression and an ability to elicit criticism, give him an advantage in the chair of this association which few can hope to rival. The interest and information which he threw into the discussions, as well as the ability and usefulness of his opening address, were common topics of conversation among the members present, and were disputed by no one. It is our simple duty to record this, for it was one of the features of the Glasgow meeting.

The President's address well repays a careful perusal. The remarks in the earlier portion of it touching the delicate question

of medical advice by chemists and druggists may be accepted as a manifesto by the best classes of pharmacutists. Every reasonable concession to the qualified medical profession is made in those observations, and we believe that the immense majority of British physicians will acknowledge that Professor Redwood has defined our position and theirs in a manner which might be accepted by both sides as honourable, just, and consonant both with public convenience and common sense. We are glad to see, also, that Professor Redwood recommends the Conference to do certain work by means of committees. We have ourselves urged this, in the belief that such work would be both pleasant and profitable. Anxiety for original research may easily be carried, as the President hinted, over the border of practical utility, and there is abundance of desirable work which might be distributed through a few groups of workers with very beneficial results. Some part of the superfluous energy and money of the Conference might be devoted in this manner very advantageously, and the reports of such committees would secure a large share of pharmaceutical attention. We suggested recently the appointment of such a committee to investigate the accuracy of the dispensing throughout the country, which during the past year has been seriously impugned. If there is a foundation for the reports which have been made in this matter, to the detriment of the trade, the Pharmaceutical Conference would surely wish to remove it; and by vigorously taking the subject in hand they could without much difficulty relieve the honest majority from the disgrace which a few black sheep are able to bring upon the entire body.

The papers read at this Conference are open to much variety of criticism. In these days of science-worship it is regarded as a sign of ignorance and of Philistinism if one whispers, *cui bono*? Some well-worn old story of Newton or Faraday is always at hand to confound the sceptic, and the records of invention and discovery are pointed to as the proof of the value of what once seemed unproductive labours. This consideration is valuable in its place, and should encourage every true student; but it does not prove that there have been no unfruitful efforts. And whether fruitful or barren, it may be a fair subject for discussion whether the Conference is doing the best it can do with its money in purchasing a quantity of investigations which have but a fanciful connection with pharmacy, and which are totally unconnected with the every-day work of nineteen-twentieths of the members. When we see papers brought forward at the Conference, and the same securing a second crop of glory at the chemical section of the British Association a few days later, it is at least fair to ask whether the two bodies have distinct provinces, and, if so, which is treading on the other's ground?

A good proportion of the papers read were, however, of special pharmaceutical interest, and he would be a dull scholar who should be unable to pick out some items of practical value from the report which we subjoin. It would take up too much space to comment on the various papers in detail; therefore, for the present at least, we leave them to tell their own tale.

The thoughtfulness and liberality of the local committee we have already hinted at. They had made the most abundant provision for the shelter and nourishment of their visitors at excellent hotels, and at most moderate charges; the hall in which the meetings were held was one in which pharmacy can but seldom hope to be indulged; they gave to all their visitors a handsome luncheon in the hotel on each day of the meetings; and when the work was over they took us altogether out of our element, and in the most luxurious manner showed us all that panorama of splendid scenery which has made the Clyde so famous among the tourists of both hemispheres. Above all, they greeted us one and all as if they heartily enjoyed our visit, and if this was only deception all we can say is that Messrs. Frazer, Davison, Kinninmont, Stanford, Fairlie, Greig, and their colleagues, are the most consummate actors in the British Isles.

REPORT.

THE Conference met in the large hall of the Royal Hotel, St. George's Square, Glasgow, on September 5, at 10 A.M., Professor Redwood, President, in the chair. After the reception of delegates, Mr. F. Baden-Benger, one of the honorary secretaries, read the

REPORT OF THE EXECUTIVE COMMITTEE.

In this their thirteenth annual report, your committee have endeavoured to lay before the members of the Conference an outline of the work which has occupied them since the annual meeting at Bristol last year, and of the various questions on which it was necessary for them to deliberate and act on your behalf during that period.

Meetings of the Executive Committee, chiefly to entertain applications for grants of money in aid of chemical and pharmaceutical research, were held on the first Wednesdays of November and December of last year, in the rooms of the Pharmaceutical Society of Great Britain (by the kind permission of the council of that society), at 17 Bloomsbury Square, London.

After the confirmation of the minutes of the previous meeting, which included a resolution raising the salary of the Editor of the "Conference Year-Book" from 100*l.* to 150*l.* per annum, the following applications from members for grants were read, several being sent in response to requests or suggestions from the committee:—

1. From Mr. A. W. Gerrard, 10*l.*, to cover cost of extraction of pilocarpine from jaborandi, with a view to its further chemical and pharmaceutical investigation.

2. From Dr. C. R. A. Wright, 20*l.*, to defray expenses in connection with the extended researches on the aconitines. Respecting this application Messrs. Hopkin & Williams had stated that they would gladly furnish Dr. Wright with concentrated extracts of the raw material for the mere cost.

3. From Mr. M. M. Pattison Muir, 5*l.*, with which to purchase the required quantity of essential oil of sage, for a research.

4. From Mr. C. T. Kingzett, 10*l.*, to pay a portion of the cost of materials necessary for continued researches on the oxidation of essential oils.

5. From Mr. E. L. Cleaver, 10*l.*, with which to purchase opium for a thorough examination of the methods of ascertaining the proportion of morphia in the drug, and a report on a trustworthy mode of assaying opium.

6. From Mr. R. H. Davies, 5*l.*, to defray part of the cost of an investigation of the definite proximate principles of ivy berries.

7. From Dr. H. E. Armstrong, 10*l.*, for the purchase of strychnine with which to conduct a research on the oxidation products and bromo-derivatives of that alkaloid.

8. From Dr. W. A. Tilden, 5*l.*, to be expended in carrying on further investigations of the aloins.

Total number of applications, 8.

Total amount of grants, 75*l.*

On the motion of the President it was resolved unanimously to grant to the gentlemen named the sums mentioned, to thank them for undertaking the several researches, and to request them to communicate results to the next general meeting of the Conference at Glasgow, on September 5 and 6, 1876.

The Treasurer was ordered to invest in consols the balance he had in hand, pending the consideration of the best mode of dealing with surplus income.

A letter was read from a member suggesting that the Conference should nominate a travelling professor of pharmacy, who should lecture in the provinces at different centres, and that the Conference should contribute towards his remuneration 150*l.* per annum. After thoroughly discussing the proposal, the committee were unanimous in the opinion that at present it would be unwise to include an active participation in the general subject of pharmaceutical education among the objects of the Conference.

At a meeting of the Executive Committee, held at 17 Bloomsbury Square, on July 5, 1876, 13 candidates were elected to membership. The names of several members whose subscriptions were more than two years in arrear, and to whom repeated applications had been made by the secretaries, were removed from the list of members.

Twenty-six subjects proposed for research were received and considered.

Professor Atfield suggested that some competent member should be employed to revise and somewhat elaborate the "subjects for papers" in the current list issued by the Conference. In the course of 13 years the Conference had proposed some 200 subjects for research, of which nearly 100 had been investigated, resulting papers forming about one-third of the 300 papers which had been read at the twelve annual meetings of the Conference. The 100 or so subjects now on the list, especially the 50 or 60 which had been down for several years, required careful revision, information concerning any work already accomplished being added to each subject, and some hints given as to the direction which further investigation should take. Probably a few of the subjects might now be excluded from the list altogether. The secretaries were ordered to give effect to the suggestion.

Professor Atfield reported that since the previous meeting he had issued about 2,500 copies of the current Year-Book.

It will be gratifying to those members of the Conference who have rightly regarded its mission to promote pharmaceutical research as all-important, that there should have been so many applications for grants in aid of this object, and that these applications should have been made by such eminent investigators of pharmaceutical and chemical problems as are included in the list of names just read. The Conference has been largely indebted to one gentleman for the means at its disposal to furnish "encouragement" in this very practical form; but the Bell & Hills Library and Research Fund will in a few years be exhausted, and it rests with the pharmacists of Great Britain—principals and pupils—to sustain what has been so generously established by Mr. Hills. Our membership roll of between 2,000 and 3,000 names includes less than 20 per cent. of those engaged in pharmacy in this country; it may, therefore, be reasonably hoped that the British Pharmaceutical Conference does not yet include all

those who feel an interest in its objects, and whose interest will, ere long, assume the active form of application for membership. An increased number of subscriptions might enable the Conference to give still more substantial aid to research.

During the first eleven years of the existence of the Conference its annual income only sufficed for its annual expenditure. Last year the income was nearly 240*l.* in excess of expenditure. This year income is again in excess by about 225*l.*, of which 35*l.* has been already expended in grants to aid research. There is now, therefore a total balance in favour of the Conference of about 430*l.*, nearly the whole of which is temporarily invested in Government securities, until the Conference shall decide on its disposal. The committee fully anticipate an excess of income of at least 200*l.* or 225*l.* in the year just commencing. Of this excess a portion, however, will be absorbed by the addition to the salary of the editor, while most of the remainder will probably be appropriated as grants in aid of research. The committee expect, therefore, that in the coming year the whole of the income of the Conference will be devoted to the leading object of the Conference, namely, the encouragement of pharmaceutical research. The major part will, as heretofore, be expended in the printing and publishing of that annual collection of all European and American researches which we term the "Year-Book of Pharmacy"—a copy of which, it will be remembered, is presented, post free, to each of our members; a not inconsiderable part will be expended in the direct payment of expenses incurred by some of our members in carrying on costly researches; while a third portion will defray the cost of necessary printing, postage, &c., in connection with books and meetings.

At a meeting of your committee held last evening, the MS. of the Year-Book for 1876, was laid on the table by the editor, Mr. Louis Siebold. About two months will be occupied in passing this through the press, and in the preparation of the report of the transactions of the Conference at the forthcoming meeting. The volume will, therefore, be issued, as usual, in December. At the same meeting 50 candidates were elected to membership.

Mr. SCHACHT read the

TREASURER'S STATEMENT—1875-6.

The General Fund.

Dr.

	£	s.	d.
To Cash in Hand	239	1	2
„ Sale of Year Books by Secretary	20	3	6
„ Sale of Year Books by Publisher	21	5	0
„ Advertisements in '74 vol.	43	0	6
„ Ditto '75 vol.	134	16	6
„ Subscriptions from Members	826	18	4
„ Dividend on £200 Consols (Jan.)	2	19	6
„ Cash from Bell and Hills Fund for Grants	30	0	0
	1,317	4	6

Cr.

By Expenses connected with Year Book—	£	s.	d.	£	s.	d.
Butler & Tanner for Printing, Banding, and Binding	452	2	0			
Editor's Salary	100	0	0			
Messrs. Churchill, Commission on Advertisements	44	9	3			
Advertising Year Book	2	2	0			
Delivery to Members	71	12	7			
Foreign Journals (Nutt)	3	0	0			
				673	5	10
„ General Printing, Butler & Tanner	19	17	2			
Stevens & Richardson	3	1	6			
Parkins & Gotto	4	4	4			
Arrowsmith (Bristol)	2	19	0			
				30	2	0
„ Directing Circulars and Envelopes				5	13	0
„ Assistant-Secretary's Salary and Expenses at Bristol				45	0	0
„ Postage of 10,000 Letters				42	14	2
„ Sundries, including Expenses of the Meeting at Bristol, &c.				24	13	2
„ Grants in Aid of Research				65	0	0
„ Purchase of £200 3 per cent. Consols, at 94½. Commission, 5s.; Power of Attorney, 5s.				189	0	0
„ Balance in Hand, July 1, 1876				241	16	4
				1,317	4	6

The Bell and Hills Library and Research Fund.

Dr.

	£	s.	d.
To Cash in Hand	39	0	4
„ Dividends on Russian Bonds, September, 1875, and March, 1876	7	7	9
	46	8	1

Cr.

	£	s.	d.
By Grant of Books to Glasgow	10	10	0
„ Grants in Aid of Research	30	0	0
„ Balance	5	18	1
	46	8	1

Examined and found correct,
J. PITMAN,
J. MACMILLAN. } Auditors.

The adoption of the report was moved by Mr. N. Smith (Cheltenham), seconded by Mr. Rimmington (Bradford), and carried.

In respect to the Bell and Hills' Fund, Mr. Bengier read a

letter from Mr. Hills, who suggested that now that the Conference was able to provide itself for the expenses of original research, it might be desirable to confine the Bell and Hills Fund to the simple object of presenting annually ten pounds worth of books to the pharmaceutical association of the town or city in which the meeting should be held. If this suggestion should be accepted, Mr. Hills offered to add another 50*l.* Russian bond to the sum now in hand, making up the total to the original sum of 200*l.*, yielding the necessary 10*l.* per annum.

Professor REDWOOD then read the following address:—

GENTLEMEN,—In accordance with the usual practice on these occasions I purpose bringing under your notice, as an introduction to the business we are about to enter upon, some of the evidences of pharmaceutical progress, which events of recent occurrence afford, and some of the questions which appear to have special claims upon our attention. It is to me a source of much gratification to find myself surrounded and supported by the members of an association in which there are so many able and earnest workers seeking the attainment of an object which is worthy of our highest ambition. We meet here as pharmacists anxious to promote the improvement of the art of pharmacy. All whom I have the honour of addressing are interested in the cultivation of this art, and desire by every available means to increase its usefulness and elevate it as an essential department of the practice of medicine. It would be difficult to select a more worthy object than that we have before us, or one which more largely partakes of a benign and philanthropic character, affecting as it does the well-being not only of man but also of those sentient beings which, while they are made subservient to the wants and contribute to the happiness of man, are entitled to his sympathy, care, and protection. The power of alleviating the sufferings of disease by the use of material remedies places the art of medicine in the highest rank among human occupations, and gives to the physician a claim to respect and gratitude which has ever been freely conceded by every class of every people throughout the world. It is our privilege to be humble ministers in the work of healing the sick. We do not pretend to that high qualification which enables the physician to search out and determine the nature, the seat, and the cause of disease; nor do we profess to be able to indicate what are the agents best suited for the relief of those who suffer from its effects. Diagnosis and therapeutics are among the highest attainments in medical knowledge, and require for their successful exercise and application an intimate acquaintance with the mechanism, the physiology and pathology, of the animal body. We make no pretensions to such knowledge; but we have a province and sphere of action which is specially ours, and the fulfilment of its requirements is as essential to the successful practice of medicine as is the exercise of what we may concede to be, as compared with ours, the higher mental qualifications of the skilled physician. It belongs to our province to produce, to collect and prepare for administration, and supply to the public, the various remedies which medical men prescribe. These are the legitimate duties of the pharmacist, and when performed, as they should be, by those who possess the requisite qualifications for them, they involve the application of much scientific knowledge, and of cultivated faculties both of body and mind.

But while pharmacy is designed thus to occupy a position of great importance and usefulness in relation to the practice of medicine, the highest fulfilment of its mission involves a certain amount of submission to, and dependence upon, those who constitute the medical profession. The physician and the pharmacist are indeed each dependent one on the other, for while the physician relies upon the compounder of medicines for the exercise of the knowledge and skill required for producing the remedies which medical experience approves, the pharmacist must be guided by those who possess that experience in directing his efforts to the attainment of required results. The exercise of too much independence on either side would be fraught with evil, and could not fail to retard the progress of improvement which so prominently characterises the state of medical practice in the present day.

Fortunately the most friendly relations exist between the medical profession and the body which this Conference represents. We are anxious to fulfil our mission, and they are willing and ready to afford encouragement and aid, not only by the expression of approval when such is merited, but by active

co-operation in furthering the objects in which we are mutually most interested.

That there should be, or appear to be, to some extent, a clashing of interests at or near to the border line which separates the respective domains of the prescriber and dispenser of medicines is inevitable so long as the requirements of the public and the regulations relating to medical practice remain as they are. The pharmacist occupies a position in which there cannot fail to be frequently occurring conflicts between the temptation to prescribe and the restraint which sound judgment would impose on the exercise of a function for which he is at least but imperfectly qualified. It is often difficult to define the limit at which the dealer in drugs and medicines should cease to advise those who purchase and intend to use such articles without consulting a qualified medical man. If every individual were so circumstanced as to be able to place his health under the constant supervision and care of a skilled physician who was ready to attend to all his ailments, and able to interpret and treat them correctly, he might, no doubt, by adopting such a course, contribute to his comfort, and perhaps to his longevity. But this would involve a concurrence of circumstances that falls to the lot of comparatively few, and even among those who might command the conditions there are not many who think it worth while to do so. Men are prone to think that they are sufficiently able to gauge the extent and purport of slight and often occurring sensations, which, although unpleasant, are not considered to imply anything more than a mere passing disturbance of the functions of some of the organs, which may be easily restored to their natural state by resorting to the use of simple popular remedies. It is so among those who can afford to pay for skilled advice in trivial cases; but how much more so among the far more numerous class who study economy from necessity and seek the cheapest method of attaining their object! The family medicine chest is an essential department of every household, although it may consist only of a glass of cold water to be taken at bed time. That mistakes are sometimes committed in this system of home treatment is certain, but the amount of evil resulting from it is probably small as compared with the benefits, real or imaginary, and the satisfaction arising from a sense of independence which a judicious exercise of knowledge founded on such experiences as most intelligent individuals have the means of acquiring may and generally do produce. The extent to which medicines are thus administered may be inferred from the fact that of the 14,000 chemists and druggists in Great Britain the greater part have but little to do with the dispensing of physicians' prescriptions, while all are engaged, and most are principally engaged, in supplying medicines to be used by the public on unprofessional responsibility. If individuals and the heads of families are justified in thus treating slight ailments by the use of remedies which they have seen used in the same way by others similarly circumstanced, it would be unreasonable to object to their extending or improving their knowledge of the use of such remedies by information obtained from those who, being engaged in the preparation and sale of medicines, are supposed to have a general acquaintance with their properties and uses. I hope and believe there are not many among the class of men thus appealed to who travel beyond the bounds required for the safety, and at the same time the convenience, of the public, under the circumstances prevailing in different localities; but it is essential that there should be some control exercised over the assumption of a duty which so obviously affects the interests of the public as does that of the treatment of diseases. There must be a limit to the extent to which unqualified pretenders may be allowed to claim the confidence and impose upon the credulity of those whose sufferings often make them easy victims to imposition. And then comes the question, where shall we draw the line and say, "Thus far, but no further"?

With reference to this question I would venture to suggest that the responsibility of the pharmacist in prescribing for those who apply to him in cases of sickness is far greater than that of any individual unconnected with any department of medicine who may prescribe either for himself or for others. The pharmacist is supposed to possess—and, indeed, he ought to possess—a certain amount and kind of medical knowledge, that is, a knowledge of medicines and their properties; but beyond this, the public, judging, perhaps, from the insignia by which he is surrounded and the atmosphere he lives in, often credit him with other knowledge than that which he can justly lay claim to. Founded, it may be, on credit thus acquired, they place confidence in his power to advise, not only with regard

to the properties and doses of medicines, but also in the treatment of diseases, with regard to which he possesses no real qualification. In this direction, from simple questions and trivial cases, he may be led on step by step; and unless he has strength of mind and firmness enough to resist the temptation which a desire to satisfy customers, to retain and not to discredit or weaken the favourable opinion previously formed of his knowledge, experience, and judgment, with other considerations natural to a man of business, he may be drawn almost imperceptibly into a habit of prescribing, for which no sound justification can be advanced.

It has been urged by the advocates and promoters of the improved system of pharmaceutical education from which this association has sprung that as pharmacists and druggists become better qualified for their legitimate duties they will be less disposed to engage in those for which they have no real qualification. This is a result that would be naturally looked for; and impartial observers of the state both of medical and pharmaceutical practice, and the changes they have undergone during the last 30 or 40 years, will readily admit that, while much yet remains to be accomplished, much has been done towards defining the limits within which pharmacy on the one hand and medical practice on the other, should be restricted, not only with a view to the interests of practitioners in each of these departments, but with the broader view of advancing the knowledge and improving the practice both of medicine and pharmacy.

We may look to the Pharmaceutical Conference—which seeks to lead its members into habits of scientific research—for efficient aid in raising and maintaining a high standard of ethics with reference to what is called counter practice. Those who have learnt to appreciate the importance in scientific pursuits of having a sufficient groundwork on which to base their theories and practice, and have acquired the habit of cautiously and logically connecting cause and effect, will be naturally disinclined to speculate in the empirical treatment of diseases of which they have no thorough fundamental knowledge.

Materia medica and pharmacy are our legitimate subjects, and they offer ample scope for study, research, and application. Diligent search has already been made among natural objects for those which possess therapeutical properties, but can it be said that the resources of nature have been exhausted, and that there are no other drugs to be found than those we have which may either be used in their natural state, or from which valuable medicinal agents may be extracted? It is true that the past year has not been prolific of new medicines of any importance, but we have jaborandi among those of recent introduction, and we have yet to learn something of this drug and its active principle.

It is chiefly from the vegetable kingdom that our most valuable drugs are derived, some of which by simple processes of pharmacy afford to the physician the means of modifying in a variety of ways the condition and the action of animal organisms, while others afford scope for the exercise of chemical knowledge and skill in extracting their more active constituents. Intimately associated with, and closely allied to, many of the drugs of vegetable origin are some of the substances used as food; indeed, it would not be easy to draw a line that should indicate sharply the distinction between alimentary and medicinal substances. Medical knowledge may be and to some extent is brought to bear upon the selection and preparation both of alimentary and medicinal substances, but it is especially required in regard to the latter. If we broadly represent as articles of food those which are intended to support vital action, to afford the means of development, and to reproduce what is daily passing and wearing away in our bodies, and as medicines those which affect the organs and their functions when in an abnormal state, or which alter their normal condition, it will be readily admitted that our sensations more clearly and safely indicate and assist us in selecting the former than the latter. Articles of food must comprise the constituents of every part of the body, and if there be a pressing want of any particular constituent beyond the daily supply nature soon indicates the want by a craving desire for that which is deficient. The same kind of natural selection applies to a certain extent, no doubt, to medicinal agents, but the same liberty of choice in meeting the wants as they arise cannot safely be admitted here as in the case of food. With agents of so much power as these often possess it cannot be left to the unaided judgment of those who have no medical or pharmaceutical knowledge to undertake their selection, preparation, and use. Special education is required for the safe and successful performance of these duties. Until scientific and practical knowledge in botany, materia medica, chemistry, was

recognised as the groundwork on which alone pharmaceutical qualifications and reputations could be based, some of the most important duties relating to pharmacy were necessarily performed by medical men who possessed those qualifications. Medical botany, materia medica, and pharmaceutical chemistry have had no representatives among the class of pure pharmacists in this country until recently. Happily the time has arrived when we may look, and already we have not looked in vain, for worthy disciples and followers of Lindley, Pereira, Christison, Anthony Todd Thomson, and Fownes, among those who have been trained and educated as pharmacists, and who are satisfied to devote themselves to the cultivation and extension of pharmaceutical knowledge. With such subjects as those I have named offering the reward of credit and renown to successful cultivators and explorers, no one need say that pharmacy is barren of profitable work, even of a high intellectual character, for those who are able and willing to work. We have only to look at what has been done and is now doing with reference to cinchona bark, ipecacuanha, and opium, to be satisfied that much yet remains to be done in those departments, and much of a similar description to be undertaken in connection with the cultivation of jalap, scammony, rhubarb, and other drugs, of which the supplies are imperfect and uncertain. We are no longer dependent on the precarious supplies of cinchona bark from the forests of South America, and may probably look forward to the time when our possessions in India will yield us all and more than all the bark we require. Hitherto we have been dependent on China for the production of our medicinal rhubarb, although it is grown in this country, and some samples of English rhubarb are hardly distinguishable from Chinese. May we not look forward to the improvement of English-grown rhubarb by cultivation or change of species, so that we may be independent of foreign importation and unaffected by changes such as that caused by the breaking up of the Russian monopoly in the trade?

It is often a subject of complaint by those who are interested in the use of good drugs, and sometimes it is urged as an excuse for dealing in such as are of inferior quality, that many of these articles are collected and prepared for sale by the native inhabitants of countries remote from advanced civilisation, where much control cannot be exercised by merchants, who are therefore obliged to take what they can get. But admitting the force of this excuse as applied to some cases, it ought not to prevent our doing what is possible towards securing a supply of good drugs. We have seen what can be done by the combined influence of a body of pharmacists in that direction in the case of senna. About thirty years ago all the Alexandrian senna was mixed with a large proportion, often a fifth of its weight, of argel leaves, but a vigorous protest judiciously advanced by pharmacists in the early days of the Pharmaceutical Society, and supported by the wholesale dealers and merchants, induced those engaged in collecting the drug to supply it in a pure or less adulterated state. Improvement of a similar description has also been brought about in a similar way in the quality of much of the scammony and some of the varieties of opium, as well as of less important drugs, which are brought from distant countries.

But not only may the expression of opinion be thus brought to bear upon the improvement of our drug supplies: there is scope for the profitable application of chemical and pharmaceutical knowledge, both at home and abroad, in practically producing drugs and medicines. The Conference may take credit for having supplied in the person of one of its late officers a successful investigator and operator who is carrying out the objects of the Government by the production of cinchona alkaloids, in a partially purified state, from the acclimatised bark trees of India. The mixed alkaloids so obtained would hardly be received with favour in this country, and they are not, I believe, intended for exportation, but for use among the inhabitants of India, where they will supply an important want at a low price, and at the same time afford the means of fully testing the efficacy of the mixed as compared with the isolated alkaloids and their salts. There are other cases in which the question occurs as to whether the active constituents of vegetable substances are more advantageously used in the state in which they naturally occur or in an isolated and purified condition. The discovery and introduction of morphia has not superseded the use of opium and its preparations, and a similar remark may be made with reference to other drugs which yield definite chemical compounds to which their efficacy has been ascribed, but to which it probably is not wholly due.

The search for alkaloids in drugs of vegetable origin has been actively pursued since the early part of this century, and has resulted in many important discoveries, by which the names of Sertürner, Pelletier, Caventou, Robiquet, and others have acquired well-merited distinction. This search is still no less active than ever. No sooner is a new vegetable drug introduced than it is made the subject of an investigation with a view to the discovery of its active constituents, that is, of such as can be isolated as definite chemical compounds with marked therapeutical properties. The inquiry is sometimes attended with difficulty, and the results obtained are, not unfrequently, of doubtful practical value. Take, for instance, the case of ergot of rye. There has been a long-standing inquiry, with many experiments from time to time made, for the purpose of ascertaining what is the active therapeutical constituent of this drug. The ergot yields to ether about 30 per cent. of a fatty substance, partly consisting of fixed oil, partly of volatile fatty acids, and partly of resinous matter. This ethereal extract was considered by Dr. Wright to be the efficacious part of the ergot, but Neidhardt ascribed the efficacy it possessed to the resin, while others have represented that the fatty matter not only is devoid of hæmostatic properties, but possesses others which are poisonous. From the part of the ergot insoluble in ether but soluble in alcohol Wiggers extracted his ergotine, which Ludwig represents as modified albumen, insoluble in water, but soluble in alcohol and in caustic alkalies. Bonjean, again, denied the medicinal efficacy of Wiggers' ergotine, and claimed that property and the name for an extract made by percolation with cold water, and evaporation to the solid state after removal of albumen by heat and precipitation of other inert matter by means of alcohol. Subsequently Wenzell obtained two alkaloids, which he has named ecboline and ergotine, both of which are described as soluble in water, with an alkaline reaction and bitter taste. More recently still Tanret, in a paper read before the Academy of Sciences of Paris, claims to have discovered another alkaloid in ergot, which for distinction he has named ergotinine. It exists only in very small quantity, is strongly alkaline in its reaction, and capable of neutralising acids. The presence of methylamine at one stage of the process by which this alkaloid is obtained, and the further development of the same amine by the action of potash on the ergotinine, are suggestive facts which will no doubt lead to further investigation. Lastly, we have the announcement, by Dragendorff, that the active principle of ergot is not an alkaloid but an acid, which he names sclerotie acid, and which is present in ergot to the extent of two or three per cent. of its weight. Now, in the face of these various, and to some extent discrepant, results of the attempts made to discover and isolate the active principle of ergot, we may be satisfied for the present to rely on the use of less definite preparations, such as the powder, decoction or liquid extract.

Some difficulties have been experienced in obtaining in a state of purity the active principles of ipecacuanha and foxglove, but important improvements have been recently made in the processes for the preparation of both these bodies. For practical use emetine is perhaps hardly required, but if it should be the process of Glenard seems to leave nothing to be desired. He obtains hydrochlorate of emetine in colourless crystalline nodules, from which pure emetine may be separated by an alkali. With regard to digitalin, the discovery of a good practical process yielding the active principle of digitalis in a pure, crystalline, and definite condition has long been an important desideratum in medicine. The various processes that have been recommended have yielded under the same name products that have differed in composition and properties, and none of which have been of such a definite nature as to ensure in different samples perfect uniformity of effects. The digitalin of the British Pharmacopœia is obtained by a process for which we are indebted to Homolle, but it cannot be looked upon as the pure active principle of the foxglove, and in an article of so much potency the fact of its being amorphous leaves some doubt with reference to any sample of it as to the amount of care and skill that have been exercised in its preparation. Some years ago Nativelle succeeded in getting digitalin in a crystalline state, for which, in 1872, the Orfila prize of 6,000 francs was awarded; but the process by which the product was then obtained was considered troublesome and difficult. More recently the process has been simplified, and we may shortly look for the substitution of pure crystalline digitalin for the less definite preparation now ordered in the Pharmacopœia.

No doubt, I believe, is entertained that digitalin possesses all

the valuable medicinal properties of the plant from which it is extracted. It is strictly, therefore, the active principle of the foxglove, but it cannot be classed among the alkaloids, because, in common with picrotoxin, it lacks that essential constituent of an alkaloid, nitrogen. We thus have two powerful organic poisons, digitalin and picrotoxin, forming remarkable exceptions to what would otherwise appear to be an almost universal law, that the element nitrogen, which in its isolated state is the most harmless of all the elements, and apparently incapable of mischief, is nevertheless, when in combination, the fomentor of evil and a constant element of things vile and poisonous. There are problems to be solved with reference to nitrogen which have hitherto baffled the efforts made for their solution by our most able chemists. We live at the bottom of an immense ocean, four-fifths of which consists of this tame and toothless nitrogen, which is here inert and indisposed to union; but when united it becomes not only a fertiliser of the land and a constituent of our nutritious food, but also the fruitful source of diseases and the cause of many human miseries. We have boundless supplies of it ready to our hands, but we cannot turn it to its most required purpose of yielding ammonia, with which we might greatly increase the produce of the earth, and thus feed many hungry mouths. We cannot by artificial means produce the alkaloids containing it which nature elaborates in the recesses of vegetable organs, leaving man by the exercise of his chemical and other knowledge to extract and isolate them, and to discover and control their useful applications for the relief of suffering humanity.

Morphia was the alkaloid first discovered, yet even now, after a lapse of sixty years, we are not only dependent upon nature for its elaboration, but avail ourselves of her further aid in supplying us by a process of natural elimination with the milky juice from which alone we extract the alkaloid. The collection of the opium seems a slow and labour-wasting process, in which at last we probably but imperfectly exhaust the poppies of their valuable constituents, and the question naturally arises, if the morphia be in the capsules before the incisions are made, why do we not resort to same process for its extraction more direct and exhaustive than that of partial exudation, more mechanical, and at the same time more in accordance with modern manufacturing operations?

We are indebted to Mr. Groves, my predecessor in this chair, for some interesting experiments made many years ago on the direct separation of alkaloids from poppy capsules. I have referred on several occasions to Mr. Groves' paper in the *Pharmaceutical Journal*, and have always risen from its perusal with a feeling of the importance of the subject and of the desirableness of further investigation with reference to it. I must add, however, that experiments which I have seen conducted on a large scale with the same object have not afforded encouraging results.

In another case, under somewhat similar circumstances, the direct method of extraction from the vegetable source has been attended with good success. Resin of scammony is now produced from the root much more economically than it can be indirectly through the process of natural elimination.

But how long shall it be said that man, with all his boasted knowledge, which has enabled him to outstrip Nature herself in the number of organic compounds he can make, including many of the natural products known to us, has nevertheless proved powerless to produce the vegetable alkaloids, with perhaps a single exception? It is the more surprising since we have every reason to believe that we have the right clue to their constitution as compound ammonias, a class of substances that has been largely and successfully investigated by Wurtz and Hofmann, who, with Fownes and others, have produced many bodies resembling the natural alkaloids. This is a field of investigation that may be looked upon as the future El Dorado of pharmacy, the successful exploration of which may possibly be reserved for some fortunate member of this Conference.

Chemistry has hitherto failed to unlock the secret of the mode of producing by artificial means the vegetable alkaloids, but she has to some extent made amends by supplying valuable therapeutical agents, some of which are efficient substitutes for them. There have been no recent additions made to our chemical materia medica, but among articles of modern introduction, hydrate of chloral, with croton-chloral—or, as it is now found to be, butyl-chloral—nitrite of amyl, and salicylic acid, occupy prominent positions.

The increased attention which has recently been given to the use of antiseptics and disinfectants in connection with surgical operations and the treatment of diseases has tended to bring

many substances belonging to these classes into notice, and to afford occasion for testing their respective powers when applied under various circumstances. Several additions have thus been made to the substances used for those purposes, both by the introduction of new agents, such as salicylic acid, and the discovery of new applications of those which had previously been used for other purposes, such as chromic and boric acids and borax.

In the discussions which have taken place respecting spontaneous generation and the germ theory of the propagation of diseases it has been shown by Tyndall that the atmosphere in which we live swarms with minute vital organisms and other floating particles, the presence of which is indicated by their power of scattering a beam of light, and that these bodies, some of which are too small to admit of their being individually examined or detected with the most powerful microscopes, may, nevertheless, be removed from the air by filtration through various media, such as cotton-wool—especially if this be moistened with glycerine. The investigations of Pasteur tend, like those of Tyndall and others, to show that in air and other denser forms of matter freed from these and similar vital organisms, no living beings, either animal or vegetable, can be developed; while, on the other hand, if the vital organisms or germs be present, together with the elements of nutrition and conditions favourable to life and its developments, living beings speedily appear, the propagation and growth of which are necessarily attended with the destruction of other forms of matter. It is to the breaking up in this way of one kind of matter to provide for the development of other forms of it that we may ascribe most of the changes affecting the health and well-being of men. In our living bodies the transformations caused by the development of minute and unseen forms of life produce various sorts of diseases, while in dead matter similar transformations cause putrefactive decomposition, attended with its repulsive effects. This view of the way in which diseases are propagated has induced Pasteur to express the opinion that it may be possible to exterminate parasitic diseases from the earth, and it has given an impetus to the inquiry after the most efficient disinfectants, and antiseptics, and deodorising agents, and the best means of using them for the desired purposes. The subject is one the investigation of which pharmacists may engage in without subjecting themselves to the charge of poaching in other men's preserves. The inquiry belongs to the departments of physics, materia medica, and chemistry, as well as to that of pathology. Appeal is frequently made to the pharmacist for his aid not only in supplying but suggesting the agents that may be most relied upon for preventing the outbreak or spread of disease and for destroying offensive effluvia. It is important as a basis on which alone sound judgment can be exercised in advising or acting in such cases, that there should be a clear and correct apprehension as to the objects to be sought and the means of attaining them. There is not unfrequently found to be a confusion of ideas with reference to the application of the terms deodoriser, antiseptic, and disinfectant. A closer connection is sometimes thought to prevail than we have good grounds for assuming the existence of, between things that are offensive to the senses and those which are injurious to health. That many offensive gases possess deleterious properties when inhaled is unquestionable, but it would not be safe to conclude that a gas is injurious to health simply because it is not agreeable to the sense of smell. The sensations resulting from the action of external objects on our senses depend to some extent on habit and education, as forcibly illustrated by the practice of the retired tallow-melter who always returned to his former place of business on melting days.

But misapprehension is liable to exist not only with reference to the efficacy of deodorising agents in relation to health, but also with reference to the peculiar action of antiseptics and disinfectants. An antiseptic is a substance that prevents or retards putrefaction, and putrefaction is the decomposition of animal or vegetable bodies, accompanied with the evolution of offensive gases. The putrefactive change occurs only in dead matter, and requires the presence of water, heat, and a ferment. There is no putrefaction in the absence of water, nor at very low temperatures, nor in the absence of those minute vital organisms to which I have referred, and which constitute the ferment from which the decomposition originates. At one time it was thought that complete exclusion of air and oxygen from moist animal or vegetable substances was essential for their preservation from putrefactive decomposition, but that theory

has been exploded, and it has been shown that although oxygen and atmospheric air may conduce to other changes, yet, if free from the germs of the class of organisms alluded to, they do not favour but rather tend to retard putrefaction.

The substances used as antiseptics act either directly on the bodies in which putrefaction is occurring or might occur, forming with them combinations that are not susceptible of the decomposing action of a ferment, or they act indirectly by destroying the vitality or otherwise preventing the development and propagation of the organisms of which the ferment is composed. In this respect antiseptics are distinguished from disinfectants, the action of the latter being directed only towards the exciting causes and offensive or deleterious products of a class of changes which are themselves more comprehensive than those implied by the term putrefaction.

Disinfectants are agents possessing the property and employed for the purpose of destroying the contagion of infectious diseases, or depriving them of their specific infective power. The influence of these contagia being exerted only in living bodies the products of their action are distinct from those of putrefactive decomposition, and they are not necessarily perceptible to the senses. With a wider signification of the term, disinfectants may be said to act on, and render harmless, the products of putrefactive and other changes when these are capable of injuring health or inducing disease. There is thus a marked difference between the objects contemplated in the use of disinfectants and antiseptics, but the agents used for these purposes are for the most part the same, and differ only in the extent to which their actions are required to be adapted in one case to living and in the other to dead matter. Disinfection, also, may attend and result from, but is not a necessary consequence of, deodorisation, for not only may there be infection without a bad smell, but there may be odours that are not agreeable and yet are not injurious to health.

Much has been done towards defining the special objects to be attained by the use of these three classes of substances, and several new and efficacious agents suitable for such uses, have been added to the lists of those previously known or thus employed, but there is still room for the exercise of practical knowledge and judgment in classifying, adapting, and preparing these various agents, with proper instructions for their use in cases in which they are required. Errors are often committed and the attainment of required objects frustrated from the want of information on these points. Among the mistakes made in connection with the use of deodorising and disinfecting agents is that of covering one smell by another, that is of concealing instead of destroying the source of evil. It may even in some cases be an error to destroy a bad smell by an agent that is not capable at the same time of destroying imperceptible miasms which accompany it, and which of the two may be the only real source of danger to health. In the use of disinfectants there is often a great want of judgment manifested in the selection of those adequate to the production of the required effect. Who, for instance, with thorough knowledge of the subject, would think of using Condry's fluid for purifying a cesspool, or Sir William Burnett's disinfecting solution for destroying the contagion of a fever-stricken apartment. There is ample room for study and research with reference to subjects such as these, and if anyone doubts it I would commend to his notice the experiences of Faraday many years ago in connection with the purification of the infected wards of the Millbank Penitentiary.

The use of disinfectants and antiseptics lies at the foundation of the treatment of some of the most inveterate diseases which medical men have to contend against, and it appertains to the pharmacist as well as the physician to be conversant with all that relates to the preparation, the mode of action, and the use of these important agents. They are comprised in our *materia medica et hygienica*. Some of them are included in our *Pharmacopœia*, but others are not. As pharmacists it devolves upon us to assist in the study and selection of members of this and other classes of articles that are contained, or may be thought worthy of being admitted among the officially recognised agents employed in medicine.

The *Pharmacopœia* is the standard of orthodoxy, with reference to medicines. It is supposed to contain all the most valuable therapeutical agents, and many of those required for hygienical purposes in connection with the treatment of diseases and the maintenance of health. These agents being intended for the use of medical men, the success of whose practice depends upon the production of the expected results of their administra-

tion, those who prescribe them, and who, of all the parties concerned, are the most deeply interested in their proper selection and preparation, are held to be the first and highest authorities in determining what they should be and how they should be defined. But prescribers of medicines may be, and indeed they mostly are, inexperienced in the commerce of drugs and the arts by which manufactured medicines are produced. The knowledge relating to these departments of pharmacology lies within the province of the pharmacist, and a large amount of this knowledge is required for the successful production of a *Pharmacopœia*. That in former days those exclusively engaged in the practice of pharmacy were not ostensibly employed or consulted in the preparation of our national *Pharmacopœias* necessarily resulted from the then undeveloped and generally unsatisfactory state of pharmacy as an occupation distinct from the practice of medicine. Since pharmacy with a scientific basis, and the Pharmaceutical Society, which has furnished that basis, have simultaneously sprung into existence and rapidly grown to maturity in this country, the claims of pharmacists to be consulted by those to whom the legislature has committed the responsibility of preparing, and from time to time modifying, our national *Pharmacopœia*, have been practically recognised, by the appeals which have been made directly to individuals, and generally through the Pharmaceutical Society, for such assistance as could be obtained in that way. Much of the value of the British *Pharmacopœia* may be ascribed to the use made of information obtained from these sources, which has so far enhanced the estimation in which the work is held by members of the medical profession that even now, after a lapse of ten years and the sale of 30,000 copies, very little disposition, or perhaps I should rather say a decided indisposition, is manifested to have any alteration made in its matter or form. Hence the frequent appearance of reprints instead of new editions. But in a work of this description, additions and alterations must be sometimes made to adapt it to the existing state of knowledge and of medical practice, and members of this Conference are furnishing matter which will facilitate the preparation of a new edition of the *Pharmacopœia* when such is called for.

If I might venture to suggest to the Conference what I conceive would be a valuable application of some of the scientific energy and the funds at its command, it would be to appoint one or two committees, not for original research, but for the practical testing and comparing of results which have been already obtained in the investigation of subjects relating to the preparation of medicines. There is a vast amount of work of this description that is much wanted, and is more suited for a committee acting under instructions from a public body than it would be for an individual voluntarily engaging in it. Work of this kind partakes to some extent of an invidious character as affecting other investigators, and while it necessarily involves the expenditure of much labour, it is not calculated adequately to enhance the scientific reputation of those engaged in it. When such work is undertaken by individuals there is a tendency generally to branch off somewhere into original research and leave the projected investigation imperfectly performed, with results which are of little practical value; whereas, if delegated to a committee the inquiry would be deprived of much of its invidiousness, the work rendered less onerous, the temptation to depart from the original design greatly weakened, and the conclusions arrived at, being the result of combined action with unity of purpose, followed by a concurrence of opinion, would carry increased influence and command a greater amount of the confidence of those for whose use they were intended.

Among subjects which appear to me most urgently to call for this kind of inquiry I would place the preparation of digitalin and aconitine in the most forward rank; but there are others of less importance, such as the preparations of ipecacuanha, ergot of rye, and opium, which have strong claims for similar investigations. Any one of these subjects fully worked out would form a contribution from the Conference in its corporate capacity that would greatly enhance the credit it derives from the separate work of its members. In the investigation of these subjects reference would of course be made to processes used abroad as well as in this country, and comparisons would thus be made of the *Pharmacopœias* of different nations. Such comparisons, accompanied with a desire, for which there are obvious reasons, to assimilate the composition of medicines bearing the same name but emanating from different authorities, would no doubt tend gradually to remove the more important discrepancies which now exist in that direction. How far it may be possible

or even desirable to make one Pharmacopœia serve for all nations is a question I do not propose to discuss, beyond simply expressing the opinion that such a result, if attainable, could only be reached at some far distant period. But there is an object more within our reach, and at the same time of less questionable utility, which is the assimilation of the strength and composition of the more powerful medicines ordered under the same names in the Pharmacopœias of different nations. For the accomplishment of this object it would be necessary to study the various processes, to freely discuss their relative merits, to ascertain what reasons there are for the adoption of special processes in particular localities, and finally to consider how far it is possible by an international convention of medical authorities, and possibly accompanied by mutual concessions, to agree to a standard of strength and composition that should be applied to all. It would be useless to attempt this with reference to more than a very small number of medicines at a time, and the value of its adoption would principally apply to powerful medicines. What we want is the gradual, step-by-step introduction of a sort of international copyright in the use of names as applied to officially recognised medicines. This, of course, must be founded upon a convention, to which the bodies legally authorised to issue Pharmacopœias would be parties, that a distinctive name once accepted by general consent as applied to a medicine shall be used by all in the same sense. Such a convention might, in the first instance, apply only to a small number of the medicines now in use, with reference to which the parties to it may be able to agree in fixing their strength and composition, and subsequent additions might be made to the list as the result of further agreement. It might be also stipulated with reference to new forms of medicine that the names first officially applied to such by any member of the convention should not be used by other members to represent medicines differing from those in strength or composition. This obviously would be the easiest part of the arrangement to carry out.

And now, gentlemen, I must draw these discursive remarks to a conclusion. I have endeavoured to bring under notice some of the subjects which appear to me to have strong claims upon our attention and to present to the mental vision a fertile field for the application of those powers of cultivation by which nature and art may be made to bring forth "a balm for every ill that flesh is heir to." This field is committed to our special charge, and it is worthy of all the pains we can devote to the hedging in of its boundaries, the rooting out of all that is rank and uncongenial to the objects to which it should be exclusively devoted, and the formation of a garden rich in those treasures which nature presents in the vegetable kingdom, and which man is striving, but vainly or with partial results, to imitate. In this field we have things that are lovely and those that are loathsome, yet all are applicable to some wise and beneficent purpose for which they are designed. It is our duty to discover their useful applications, and to adapt them for their proper uses.

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Mr. FRAZER said it was his pleasing duty and privilege to move the thanks of the Conference to Professor Redwood for his able, clear, practical, and seasonable address. The pharmacutists of the North had reason to be proud of such a president. He had long been known as the editor of "Gray's Supplement," and as professor of pharmacy he was universally recognised as a round man in a round hole. Certainly in honouring him the Conference honoured itself. He (the speaker) had been much struck with Professor Redwood's remark in reference to the greater responsibility of chemists than of others in recommending medicines. But he had no fear whatever that the doctors would ever be able to prevent counter prescribing. They could not do it.

Mr. STANFORD (Glasgow), in seconding the vote of thanks, remarked that exception might be taken to one portion of the President's address, in the fact that he had omitted to include himself among the list of eminent teachers of pharmacy. No doubt there were more of Professor Redwood's own pupils around him than of all the other teachers named by him put together. The address just listened to showed that Dr. Redwood had lost none of his freshness and originality with his increasing years. In reference to the use of a family medicine chest, to which Dr. Redwood had alluded, Mr. Stanford gave some of his own experiences with a medicine chest in the islands of the Hebrides, where in one case he had succeeded in sub-

stituting a more appropriate remedy for whiskey in the case of a young lady ten months old who was "near dead." He was especially pleased with the delicate manner in which Professor Redwood had treated the subject of prescribing and dispensing. In Glasgow pharmacy was to a great extent in the wrong hands, and Mr. Stanford, speaking somewhat as an outsider, hoped soon to see the time when the words Medical Hall would be no longer seen over druggists' shops.

Dr. REDWOOD acknowledged the vote, and the reading of papers was next commenced.

NOTE ON LIQUID EXTRACT OF PAREIRA.

By B. S. Proctor.

THE object of this paper was to show the great variation in strength of commercial samples of liquid extract of pareira, to point out the probable cause of the discrepancy, and to suggest a modified process calculated to yield uniform results.

The writer had obtained three samples from sources of good repute; and comparing them with one another, and with a sample made by himself, he found—

100 grains of R's left	3 grains dry residue
" D's "	6 " "
" M's "	10 " "
" P's "	15.5 " "

The strengths, as judged by tasting and by density, giving similar though not such reliable results.

It was assumed that the intentions of the Pharmacopœia were that the exhaustion of the root should be nearly perfect by the process, and that the different operations varied in their approximation to this result according to the degree to which comminution had been carried, the official instructions to use coarse powder being too vague.

It was suggested that while the present formula is in force the root should be powdered to such a degree as to allow of being well exhausted with the water directed to be used; and that an improved formula might be founded upon that at present in use for the preparation of liquid extract of opium, namely, extracting the crude drug with water, evaporating the liquor to an extract, and dissolving a given weight of this extract in spirit and water.

Professor REDWOOD briefly introduced the discussion, remarking in reference to one suggestion of Mr. Proctor's that he thought there was an advantage in naming some approximate quantity of the menstruum.

Mr. BRADY said there was one point on which no remark had been made. It was very essential that the root should be used, and not merely the stem. Liquid extract of pareira might be perfectly honestly made, but if the true root were not employed the products would not correspond. He understood that Mr. Proctor had not powdered these roots himself. No doubt the degree of comminution was an important point, but it was not the only consideration. In regard to the amount of menstruum he quite agreed with the remarks of Professor Redwood.

Mr. PROCTOR also agreed that there should be some limit. He did not wish to use a thousand gallons. But if three pints were sufficient to exhaust the root he would prefer to use that quantity.

Mr. KINNINMONT showed specimens of true and false pareira root, and illustrated the difficulty of getting the true root by mentioning that he had seen in a cabinet of specimens got up for educational purposes the yellow pareira instead of the true chododendron.

Mr. PROCTOR was aware that the identification of the true root was a matter of primary importance. His paper, however, had been simply intended to treat the pharmacy part of the subject, not the materia medica.

Mr. GREENISH asked how long had the samples been made. He had observed some deterioration after keeping.

Mr. PROCTOR said he had no means of telling how long the three first-named samples had been made, but he should judge not very long, as he procured them after he had commenced to prepare his own.

Professor ARTFIELD said this paper raised the important question of having a definition in the Pharmacopœia of the terms fine and coarse. He read from the United States Pharmacopœia a paragraph which thus defines the terms employed in reference to the comminution of powders:—Powder passed through a sieve of 80 or more meshes to the linear inch, *very fine*; 60 meshes, *fine*; 50 meshes, *moderately fine*; 40 meshes, *moderately coarse*; 20 meshes, *coarse*.

Mr. GROVES was not generally much in favour of percolation. Of course absolute exhaustion could not be arrived at, but he thought a trustworthy liquid extract could be obtained from percolation by a moderate quantity of menstruum and subsequent pressure of the marc. It would be very interesting to know for certain what were the powders from which these samples had been prepared.

Mr. PROCTOR said he would endeavour to ascertain.

NOTES ON THE COLOURING MATTER OF CROCUS SATIVUS.

By W. W. Stoddart, F.C.S., &c.

THE well-known colouring matter of the saffron is no less interesting than puzzling. In many physical and chemical characters it differs from all the other yellow dyes, and when present in very minute quantity is somewhat difficult in its identification. Comparatively little is known of its composition, and very little has been done towards the solution, so that it behoves the experimentalist to bring forward any matter of detail, however trifling.

A short time ago I had some confectionery brought for analysis, which was suspected of being coloured with orpiment or chromate of lead. The comfits in question were white, globular, and composed entirely of sugar. Each had a nucleus about the size of a pea, having a canary yellow colour. It was during this examination that I noticed what I think promises to be a good and delicate test for the colouring matter of saffron (*Crocus sativus*).

A small piece of the sugar plum was put into a test tube, and dilute hydrochloric acid added. Instantly all the colour vanished, strongly resembling the reaction of a metallic salt. I then inserted a small piece of copper foil suspended by a platinum wire in the usual way for Renisch's test and boiled. To my surprise the yellow colour returned with a bright and extremely beautiful red fluorescence. This was especially noticeable because the yellow matter present in the comfit must have been infinitesimal.

This was repeated several times, with the same result, so that it may be used as a safe and easy test. It is imperative that a weak solution of saffron must be used for its proper working. Turmeric behaves in a somewhat similar manner, but is easily distinguished by the powerful action of alkalies which do not affect the colour of saffron.

Of course this singular experiment led me to make an examination of the colour given by the stigmata of the crocus, but the subject soon showed so many and unexpected difficulties that I have not been able to get ready the requisite number of analyses that must be performed before its nature can be fully explained.

The experiment was next repeated with a plain infusion of the stigmata, but utterly failed. The liquid was decolourised, but remained obstinately colourless when boiled; nor could I get the fluorescent reaction in the slightest degree. At length the thought occurred that the original experiment was on a saccharine material, and a single crystal was dropped into the test tube, when, to my great satisfaction, the colour and fluorescence were instantly developed, so that the sugar had evidently something to do with their production.

The test is used by putting into a test tube a *very dilute* infusion of saffron or a suspected yellow colour. If no sugar be present add a crystal and as much dilute hydrochloric acid as will completely decolourise it. Bring the whole to the boil, and if the colour be due to saffron the yellow tint will be restored in a few seconds and the beautiful fluorescence make its appearance on the surface of the liquid. To give some idea of the extreme delicacy of the reaction, an infusion was made containing only $\frac{1}{23232}$ nd part of its weight of the stigmata, when the characteristic appearances were shown in the most decided manner. [Mr. Stoddart showed the experiment to the Conference.]

The natural colouring matter of the crocus is called polychroite, but it is evidently a compound of two colouring principles, a red and a yellow. It is very soluble in water, but insoluble in ether and absolute alcohol. Its aqueous solution is completely decolourised by chlorine, nitric and hydrochloric acids.

A large quantity of the last is required, the colouring matter dissolved from the third of a grain of the stigmata requiring about 30 minims of strong hydrochloric acid for complete decolourisation.

The following is the mean result of several analyses:—

Colouring matter (polychroite)	..	..	62.31
Volatile oil	..	..	1.32
Sucrose	..	..	.43
Glucose	..	..	.11
Gum and allied substances	..	..	7.50
Cellulose	..	..	9.64
Ash	..	..	6.82
Moisture	..	..	11.87

100.00

The stigmata of *crocus sativus* are divided into three linear divisions, joined together at the summit of the long style.

When properly prepared they make good microscopic objects, showing their cellular structure in a most interesting manner.

In addition to the polychroite the stigmata contain both cane and grape sugars, with gum and a volatile oil, to which the peculiar odour of saffron is due.

The volatile oil is a bright yellow, and is said by Weiss (*J. pr. Chem.*, 101, 65) to be isomeric with carvol ($C_{10}H_{14}O$), which is universally present in most of the essential oils. It is worthy of remark that when this oil has been kept some time it becomes changed into a white solid, having the same elementary composition and resembling thymol.

When an infusion of saffron is boiled with hydrochloric acid it is decomposed, and a copious flocculent red precipitate of crocin ($C_{16}H_{15}O_6$) separates. When dried it forms a bright red powder, which is tolerably soluble in alcohol, but quite insoluble in water, thus having exactly the opposite qualities than when it existed in combination as polychroite. One hundred grains of the stigmata yield from 9 to 10 grains of crocin.

Crocin is extremely soluble in very dilute solutions of the various alkalies, forming a very pure and brilliantly yellow liquid, from which it may be re-precipitated by acids.

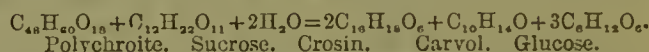
The liquid filtered from the crocin contains the yellow colour, with a large quantity of glucose, and the same yellow volatile oil as previously found in the plant.

Weiss, in his paper before mentioned, gives the following formula for the decomposition of polychroite by acids:—

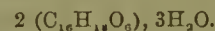


But, in all probability, it is not quite correct, because he has not allowed for the colouring matter left after the separation of crocin, nor does it explain the action produced by the addition of a little more sugar than that existing in the stigmata. Moreover, according to the formula, we ought to get more crocin than is found to be the case in practice.

The presence of more sugar than is naturally present appears to be necessary for the complete decomposition of polychroite, so that probably the following would be the more perfect rendering of Weiss's formula:—



When crocin is precipitated by acids from an alkaline solution it is dark brown instead of a bright red. It seems to be hydrated



The determination of the percentage composition of perfectly dry crocin gave the following results of three trials, which agree very closely with Weiss's formula of $C_{16}H_{15}O_6$:—

1. 0.63 gm.	gave 1.4469 gm. of CO ₂ and 0.3384 gm. of H ₂ O
2. 0.41 "	.9416 " 0.2203 "
3. 0.44 "	1.011 " 0.2352 "

Which would yield

	1 (63)	2 (41)	3 (44)
C	.3946	.2568	.2757
H	.0376	.044	.0261
O	.1978	.1288	.1382
	.6300	.41	.44

The percentage of them would therefore be

	1	2	3	Calculated
C	62.64	62.63	62.67	62.745
H	5.97	5.97	5.94	5.882
O	31.39	31.40	31.39	31.373
	100.00	100.00	100.00	100.000

When polychroite is dissolved and mixed with sugar it easily ferments, and the crocin precipitates. This is often seen in the shops, forming the red deposit so troublesome at the bottom of the syrup croci bottle when kept a long time, especially in warm weather. The ready solution of crocin in alkalies explains the reason why many pharmacists add a little potash to prevent the thickening of the sugar.

The very limited time at my disposal has prevented my pursuing the subject any further at present, but I am engaged in more fully examining the subject, both chemically and optically, so that at some future time I may have the pleasure of bringing before you more detailed results.

A group of opium papers were then read in succession, it being mentioned that it would be convenient to take the discussion on them at one time.

VARIATION IN STRENGTH OF THE OPIUM PREPARATIONS.

By D. B. Dott.

This paper contains the results of an examination of the more important of the opium preparations, samples of which were procured from several wholesale druggists in London, Dublin, and Edinburgh.

In the first place a number of extracts were prepared from samples of assayed opium. It was found that in 12 samples of Turkey opium which were of the B. P. strength the yield of dry extract varied from 19 to 56 per cent., while the percentage of morphia in these extracts varied from 14 to 34. In four samples of Persian opium the average amount of dry extract was 63 per cent., and the percentage of morphia in their extracts varied from 14 to traces. The author here points out that two chemists who each set to work with an opium fully up to the B. P. standard might succeed in preparing extracts one of which would be more than double the strength of the other. Eleven samples of the extract were examined, and in these the percentage of morphia varied from 15.4 to 22.8, the average being 19.7. Out of 15 specimens of the liquid extract, the maximum yield of morphia was 4.5, and the minimum 0.6 grs. in the fluid ounce, giving an average of 3.1. Eighteen samples of the tincture were assayed, and the variation in their morphia strength was found to extend from 4.3 to 0.5 grs. in the fluid ounce, the average being 2.6.

The general conclusion drawn from these experiments is that the opium preparations at present sold to the public are not trustworthy medicines, on account of the great divergence in their morphia strength. The author is further of opinion that the only remedy for this unsatisfactory state of matters lies in the abolition of all the Galenical preparations of opium from the Pharmacopœia, and the substitution of corresponding preparations of the opium alkaloids.

REPORT ON THE METHODS IN PRESENT USE FOR THE ASSAY OF OPIUM FOR MORPHINE.

By Edward Laurance Cleaver, F.C.S.

This paper is divided into two parts, the first consisting chiefly of experiments on the action of alkalies on infusion and tincture of opium, and the conclusions deduced from them; and the second, the application of these experiments to criticism of the different methods of opium analysis.

The conclusions arrived at by the author are as follows:—

That preliminary treatment of opium by benzene, bisulphide of carbon or ether, enables the extraction of opium by water to be accomplished with about half the amount of liquid that would otherwise be employed.

That hot water, although extracting a larger quantity of solid matter from opium than cold water, does not give a larger yield of morphine, the difference in amount of extraction consisting chiefly of narcotine and resinous matter, which is left behind by treating the extract from hot water with cold water.

That the addition of chalk to opium before treatment with water prevents the meconate of calcium from being taken into solution, as well as a larger quantity of narcotine and resin.

That the addition of lime to opium before treatment with water prevents meconic acid, meconate of calcium and resin from being taken into solution, but does not prevent narcotine from so being taken up.

That ammonia added in excess to infusion of opium does not precipitate the whole of the morphine present, the amount remaining in solution depending on the excess of ammonia present, and on the amount of liquid used.

That infusion of opium when precipitated by slight excess of ammonia, and left to stand for some time, redissolves part of the precipitate of morphine first formed, and if left sufficiently long the greater part of the morphine present will be taken into solution, and can be again precipitated (generally) to a crystalline form by additions of ammonia. The solution has then no further tendency to redissolve the morphine.

That in precipitating morphine from infusion of opium care must be taken that the liquid has a faint smell of ammonia, or not allowed to remain until the ammonia be completely driven off. If care be observed on this point, then the amount of morphine left in solution will correspond to the amount which would be taken up by pure water.

That ammonia added to infusion of opium acidified with hydrochloric acid until exactly neutral does not precipitate the morphine present, but does throw down the resin and meconite of calcium.

That potash and soda added to infusion of opium do not immediately precipitate morphine, owing to the solubility of morphine in excess of these reagents.

The difference in composition of the precipitate obtained by ammonia in solution of opium which has been extracted by neutral acid solutions is here shown:—

	Opium exhausted with water	From 100 grains Opium mixed with chalk and exhausted with water	Opium exhausted with water after preliminary treatment with benzene
	grains	grains	grains
Precipitate obtained by ammonia from concentrated aqueous infusion	26.06	19.6	20.5
Portion of precipitate soluble in alcohol	23.08	18.5	17.2
Portion soluble in ether or bisulphide of carbon	5.5	4.1	0.1
Morphine in precipitate....	13.28	13.25	13.59

The action of heat either on neutral acid or alkaline solutions of morphine is touched upon, and the author proves that morphine is decomposed by heat alone, but mostly so when aided by alkalies.

That the use of animal charcoal is attended by loss of alkaloid, in most cases by more than one per cent.

In the second part of the paper the author criticises successively the processes proposed by Arnoldi, Flückiger, Schacht, Guibourt, Merck, Guillemond, Staples, and that of the British Pharmacopœia, and points out the disadvantages of each, and the modifications of them by which the loss of morphine may be prevented.

The objections urged by the author against these processes are:—

1. That no account is taken of the loss of morphine by virtue of its solubility in water and ammonia.

2. That the large amount of liquid used to exhaust the opium requires long-continued heat for the purpose of evaporation, and thus causes destruction of the morphine.

3. That the use of dilute alcohol and water to remove narcotine and colouring matter is bad, as it also dissolves some of the morphine present.

4. That the substance sometimes weighed as morphine is not pure, but contains varying amounts of impurities.

5. That tincture of opium contains meconate of calcium, which is precipitated with the morphine on addition of alkalies.

6. That the addition of ammonia to alcoholic solutions of opium does not precipitate the whole of the morphine present.

7. That lime water dissolves narcotine when morphine is present.

The process recommended by the author is a modification of that recommended by the British Pharmacopœia.

It is as follows:—

Opium is first treated with boiling benzene, ether, or bisulphide of carbon, and then mixed with two or three times its bulk of some inert powder, and its own weight of slaked lime. It is then exhausted with water by percolation, acidified with hydrochloric acid, and neutralised by ammonia. The liquid is filtered, and the filtrate evaporated to about twice the weight of the opium originally used. Ammonia is then added to slight excess and the solution set aside for 12 hours. The precipitate is then collected, washed, dried, treated with ether, and weighed, and to the weight found is to be added .001 gram. for every 1 c.c. of liquid used in precipitation and washing, or the liquid can be agitated with fusel oil, the oil evaporated and the morphine estimated in the residue in the usual manner. The amount thus found is then to be added to that obtained by precipitation.

If the process has been properly conducted the morphine obtained is of a dull white colour, perfectly soluble in acids, alkalies, and alcohol.

Table showing amount of Morphine obtained by different Processes from the same sample of Opium.

	Turkish	Persian	Indian
Arnoldi	26	25	13
Flückiger	9.5	8.0	3.0
Guibourt	10.2	9.0	3.6
Schacht	11.0	11.0	4.0
Schacht's modified ..	12.8	13.0	5.2
Guillemond	9.8	8.7	3.2
B.P.	12.1	12.3	4.9
		B.P. modified	
Turkish	..	..	13.0
Persian	..	..	13.4
Indian	..	..	5.6

NOTE ON OPIUM ASSAY.

By B. S. Proctor.

THE method of assay suggested in this note consists, in the first stage, of reducing the opium to a soft pulp by the aid of water, warmth, and friction, diffusing this in spirit, and exhausting by percolation with spirit.

The second stage consists in evaporating the tincture thus obtained till of a syrupy thickness; diffusing this in water, by which resinous and other matters are precipitated; again evaporating the clear liquor to small bulk, and mixing with spirit before the addition of ammonia, by which the alkaloids are precipitated in a crystalline form.

The third stage consists of the treatment of this precipitate with dilute spirit and water, and after drying, washing with benzine. Finally, after weighing, its purity is further indicated by solubility in lime water, and if found wanting a second precipitation yields morphia of unquestionable quality.

NEW DERIVATIVES FROM THE OPIUM ALKALOIDS.

By C. R. A. Wright, D.Sc.

Dr. Wright in his paper mentioned a new educt from opium, obtained by Mr. Macfarlane, for which the name oxynarcotin was proposed, as it contained one atom more of oxygen. One of the most interesting results of Dr. Wright's investigations was the establishment of the possibility of extracting from narcotine the odorous principle of vanilla. This, though not a practicable means of obtaining a supply commercially, was promising, as he thought the clue thus given might lead to the synthesis of the alkaloids themselves. Although narcotine and morphia seemed to possess directly inverse properties, no correspondence of chemical structure could be traced between them. He had also found that opianic acid could not be produced from morphia or codeia.

NOTE ON THE PRESENCE OF FREE ACETIC ACID IN OPIUM.

By David Brown, F.C.S.

THE author has found a very small quantity of free acetic acid in all varieties of opium. Acetic acid must therefore, he thinks, be considered to be one of the normal constituents of the drug.

Professor REDWOOD directed attention to the practical points in the group of papers on opium which had been read. He said if this meeting of the Conference had produced no more than these papers it would have greatly added to the indebtedness of pharmacists generally to the labours of its members. Regarding Mr. Dott's remarks as to the variation in the strength of the opium preparations, Dr. Redwood said much of this might be obviated if druggists were more in the habit of applying the Pharmacopœia or some other test to their opium. Mr. Cleaver and Mr. Proctor had given attention to the assay of opium. He (Dr. Redwood) did not consider the Pharmacopœia test a perfect one. For his part he was rather disposed to look in the direction suggested by Mr. Proctor than in that indicated by Mr. Cleaver. But such a question as this was one eminently suited to a committee such as he had suggested in his opening address.

Mr. GERRARD could confirm Mr. Cleaver's remarks in favour of the use of benzole in the preliminary treatment of opium to be tested, especially in those samples which contained much oily matter, as was the case with Persian opium. In some samples of Persian opium he had found as much as 12 or 13 per cent. of morphia.

Mr. CLEAVER said his paper applied particularly to the means of obtaining morphia. He quite agreed with Mr. Proctor that morphia was often incorrectly estimated by reckoning what was not morphia. He thought, however, Mr. Proctor had not allowed for the loss that would be caused by the water in his process.

Mr. PROCTOR, in reference to Mr. Gerrard's remark, said he had used his method for Persian opium without finding that the oil presented any difficulty.

A NEW EXCIPIENT FOR SOME OF THE OFFICIAL AND OTHER PILL-MASSSES.

By G. Welborn.

THE unsatisfactory condition which several of the pill-masses of the Pharmacopœia acquire by long keeping may, in a great measure, be prevented by substituting the following mixture for some of the official excipients:—

Gum tragacanth, in powder	..	..	..	..	½ oz.
Glycerine and water, of each	..	..	..	..	2½ ozs.
Oil of pimento	..	..	..	..	5 drops.
Mix.					

The weight of the above excipient required for the following preparations, and the Pharmacopœia quantities, is approximately as below:—

	Tragacanth excipient.	Confn. of roses.
In Pil. albes et ferri.	2½ ozs. may be substituted for	4 ozs.
„ Pil. albes et myrrhae	1 oz.	2½ ozs.
„ Pil. rhef. comp.	2 ozs.	Treacle.
		4 ozs.

5j. of sulphate of quinine and 5j. of the tragacanth excipient make a nice mass, while only gr. viij. of it suffice to form a tough plastic mass with 5j. of compound ipocacuanha powder. The properties of the tragacanth excipient may be summarised as follows:—

The relatively small quantity necessary to effect the desired purpose, the facility with which it mixes with dry powders, its cleanliness, and its efficacy as a preservative.

ON PHOSPHORUS PILLS.

By Thomas Haffenden.

THIS paper is descriptive of an easy and quick method of dispensing phosphorus in the form of pills so that the prescriber can have them made exactly as he wishes, and can depend upon their being well mixed. By this process they can be made in small quantities as required. The only extra apparatus required in addition to the ordinary pill-making requisites is a small water bath holding two or three ounces, a tripod stand and spirit lamp. The pills are composed of mucilage (B.P.), powdered sugar, tragacanth, phosphorus, and quinine or reduced iron, &c., as may be ordered. The advantages are that a pill containing phosphorus in its free state is quickly made—in a few minutes' longer time only than an ordinary pill mass, so that the prescriber is not bound by one or two standard formulæ kept on hand, and possibly had in stock for months or even years. As regards pill coating, the secret of success is first to make the pills waterproof with the ether and tolu varnish, and then put on French chalk and mucilage. The author had succeeded very well with albumen in the place of mucilage, the albumen prepared as in making albuminised paper for photographic purposes.

Professor REDWOOD said the form for phosphorus pill of the British Pharmacopœia had been a good deal criticised since its introduction. That formula originated with himself, though the basis of it was not originally suggested by him. A son of Mr. Abraham, of Liverpool, had found that phosphorus readily dissolved in, or rather diffused itself through, tolu balsam when heated, and this, having a higher specific gravity than water, could readily be worked under the surface of that liquid, without exposing the phosphorus to the danger of oxidation by exposure to the air. As far as he was able to judge, after comparing this form with others that had been published, he regarded it as the best for the administration of phosphorus in the form of pills, or rather as the best process for keeping phosphorus in a pilular condition for dispensing. Its great advantages were that it insured the perfect diffusion or comminution of the phosphorus, and that the product could be kept quite easily under cold water without undergoing any change. He had so kept it for more than twelve months. When the pill was prescribed the physician ought to order 1 grain of Castile soap with 3 grains of the pill mass. The addition of a little spirit makes the manipulation quite easy: with that addition the pill would be perfectly soluble. Another form for a phosphorus pill, which was a good one, though not he thought equal to the Pharmacopœia process, was to dissolve phosphorus in some grease (tallow, for instance), and add some pure phosphate of lime. This salt has the property of giving a good pilular consistence to such substances as lard, if added in small quantity, and, as it sufficiently increases the specific gravity, the resulting compound could be kept under water. These two formulæ were, in his opinion, the best that had been suggested for the administration of phosphorus in pilular form.

Mr. MARTINDALE thought there was an objection to Mr. Haffenden's process in that it presented the phosphorus only in a state of comminution and not of solution. The speaker gave preference to cocoa butter as a solvent for the phosphorus. In regard to the use of resin, he said it had been found that oil of turpentine renders phosphorus non-poisonous, and is, indeed, used as an antidote for it. A physician, who had used phosphorus largely, and had prescribed quantities of phosphorus pills prepared with common resin, according to Mr. Gerrard's formula, informed him he never could get any effect from these—the resin, to a modified extent, seems to have a similar action on phosphorus to that of oil of turpentine. He thought other resins might have the same property, and thus check the action of the phosphorus as a remedy. He recommended a 1 per cent. solution of phosphorus in cocoa butter, a proportion which can be easily taken up. He had not found phosphate of lime render the substance more plastic, and he had found no difficulty in keeping the mass without water by using bottles with well-greased stoppers. The mass which had been kept in water was

not easily varnished, which was an objection. The varnish he had used was a strong solution of sandarac in alcohol.

Mr. B. S. PROCTOR thought the Pharmacopœia process would be better if it were stronger. He had known a $\frac{1}{2}$ grain of phosphorus prescribed. That would require 25 grains of the cocoa butter recommended by Mr. Martindale. His process was to dissolve the phosphorus in bisulphide of carbon, adding 1 drop of oil of cloves to prevent the phosphorus from firing, and then pouring on liquorice powder and heating until the proper consistence was attained.

Mr. GREENISH also expressed a preference for bisulphide of carbon as a solvent for phosphorus.

Mr. BORLAND (Kilmarnock) much preferred the Pharmacopœia process. He instanced a formula which was frequently prescribed in his neighbourhood, consisting of

Ext. nuc. vom., 1 grain.
Ferri redact., 1 grain.
Pil. phosph., 3 grains.

With cocoa butter he had found it quite impossible to obtain a suitable pill from this compound, but with the Pharmacopœia product it was readily manipulated.

Mr. EKIN (Bath) said an assistant of his (Mr. Appleby) had been working on this subject, and he hoped next year to offer a paper to the Conference on the subject. He had found common resin the most satisfactory solvent. It easily dissolved the phosphorus, could be kept any length of time under water, and was easily used, being powdered quite readily. The following was a formula they often had to dispense:—

Phosphori, $\frac{1}{2}$ gr.
Quinine, 2 grs.
Ferri Redacti, 2 grs.

Professor REDWOOD did not understand how the resinous phosphorus spoken of by Mr. Ekin could be kept under water, as it was of a less specific gravity than water.

Mr. EKIN explained that it was the opaque variety of resin which had been used.

Mr. GERRARD thought that balsam of tolu was perhaps a better solvent than resin, but it was the wax in the pill of the Pharmacopœia which was the objection.

Professor REDWOOD said the object of the wax was to give a better pilular consistence. Soap was not added to the formula, because the pill would not keep with that addition, but he had long told medical men that in prescribing it was necessary they should order some soap in their prescriptions.

Mr. LONG (London) commented on the conflict of evidence which had been brought forward. Mr. Ekin had recommended resin as a solvent, and Mr. Martindale had stated that resin would render the phosphorus inert. We certainly ought not to employ excipients which would have that effect.

ON SOME SALTS OF PILOCARPINE.

By A. W. Gerrard.

THE only described compounds of pilocarpine known to the present time are the nitrate, chloride, and platino-chloride. The two former I a year since prepared; the latter has since been made by Kingzett as a crystalline salt, and used by him in conducting an elementary analysis of the alkaloid, to which, after several experiments, he assigned the formula $C_{23}H_{34}N_4O_4(4H_2O)$.

In the early part of this year I succeeded in obtaining some almost pure and colourless alkaloid (its purification having been hitherto a matter of difficulty) by means of the property I found the nitrate to possess of being soluble in boiling alcohol, from which it separates, on cooling, in tufts of white, shining tabular crystals. By these crystallisations it can be obtained in an almost perfect state of purity. The alcohol should be retained for further treatment, as it holds in solution a small portion of the salt. The crystal, thus obtained, dissolved in water and made alkaline with potassic hydrate, shaken with chloroform, the chloroform separated and removed by distillation, yield the purified alkaloid.

Portions of alkaloid prepared by this method were dissolved in water, and neutralised respectively with nitric, hydrochloric, sulphuric, acetic, phosphoric, and hydrobromic acids: the quantities of each being small they were allowed to evaporate spontaneously. In three days they had all become crystalline. The nitrate phosphate and hydrobromide were best defined: the remainder were very deliquescent, especially the sulphate and acetate, the latter forming a block of pretty plumose-looking crystals, which readily deliquesced at low temperatures.

I made some experiments on the effect of various solvents on the above salts, excluding the sulphate, as the crystals were embedded in a viscous mass and difficult to separate. The

nitrate is soluble in water, sparingly in cold, but freely in boiling alcohol; it is insoluble in chloroform, benzole, carbon bisulphide, and ether. The phosphate is soluble in water, sparingly in cold, more freely in boiling alcohol, from which on cooling it crystallises in lustrous tables; it is insoluble in ether, chloroform, benzole, and carbon bisulphide. The chloride is freely soluble in water, alcohol, and chloroform; insoluble in ether, benzole, and carbon bisulphide. The acetate is soluble in water, alcohol, chloroform, benzole, and ether; insoluble in carbon bisulphide. The hydrobromide is soluble in water, alcohol, and chloroform; insoluble in ether; and carbon bisulphide. The form of the crystals of these salts of pilocarpine is somewhat difficult to determine. I have no doubt, however, they are tabular and of the oblique system. The nitrate and phosphate, on account of their stability and definite character, recommend themselves most for general purposes.

Mr. KINGZETT did not quite agree with Mr. Gerrard, who, he said, had not correctly stated the composition of the salt he obtained, which was the platino chloride of dichloride of pilocarpine. The method he adopted for obtaining the alkaloid was the process of Sonneuschein: this yielded it in a pure state. It was somewhat curious, though, that Mr. Gerrard had obtained the hydrochlorate crystalline, whilst he had failed. He would like to see an analysis of Mr. Gerrard's preparations.

Professor ATTFIELD said it should be explained that Mr. Gerrard had only undertaken to investigate the pharmaceutical nature of jaborandi. In doing this he had obtained a crystalline salt. But Professor Attfield did not understand that he had definitely declared the chemical character of this salt.

Mr. MARTINDALE said he had found the preparations of these alkaloids very definite in their action. A quarter grain of the salt produced all the effect of a drachm of the leaves.

Mr. CLEAVER said he had worked for a long time on jaborandi, and had found it almost impossible to obtain any crystalline alkaloid from it. He had at last succeeded in obtaining a very minute portion in that state; little more than a grain, however, resulting from 14 lbs. of the leaves.

Mr. GERRARD said he had no doubt Mr. Kingzett's alkaloid and his own were identical; and he could, he believed, explain why Mr. Kingzett failed to obtain the hydrochlorate in crystals. He had met with the same difficulty, and had observed that it was due to impurity, which led him to doubt somewhat Mr. Kingzett's results.

CAPSAICIN—THE ACTIVE PRINCIPLE OF CAPSICUM FRUIT.

By J. C. Thresh.

THE few chemists who have hitherto examined the fruit of the capsicum differ widely in opinion as to the nature of its constituents, and especially with regard to the principle to which it owes its powerful pungency. The isolation of this active principle by me, as published in the *Pharm. Journal*, is a step towards the elucidation of the chemistry of the subject. Unfortunately, want of time has prevented me submitting it to ultimate analysis for the purpose of ascertaining its elementary composition. From the crude capsaicin obtained by a slightly modified form of my original process crystals can be obtained by three methods:—

1st. By dissolving the waxy matter in solution of potash, and adding excess of ammonium chloride.

2nd. By making a strong potash solution and diluting with water.

3rd. By passing a stream of carbonic acid gas through an alkaline solution, whereby the capsaicin is thrown down in minute crystals.

The properties of this substance, obtained and purified by repetitions of this last process, are as follows:—Melting point, 138° Fahr. Congealing point apparently not definite: if heated a few degrees above its melting point it does not solidify upon cooling, but remains semi-fluid and transparent for from 24 to 36 hours before solidification commences. Specific gravity, 1.060.

By careful manipulation it can be volatilised without decomposition: in one experiment the temperature at which volatilisation took place was noted and found to be 240° Fahr.

Strong nitric acid dissolves it, with production of a cherry-red solution, which changes to straw colour when heated, ruddy fumes at the same time being evolved. This acid solution, when treated with an alkali, becomes of a golden yellow tint, which is perceptible even when largely diluted.

Dilute nitric acid acts upon it in a similar manner, but more slowly.

Strong sulphuric acid dissolves it in the cold without decomposition, but if slightly warmed decomposition instantly commences. The addition of water to its solution in the strong

acid causes it to be precipitated. Glacial acetic acid dissolves it readily, but from this solution it is thrown down upon dilution.

Hydrochloric acid dissolves but a trace, and the addition of water to it causes a slight opalescence. Strong dilutions of the fixed alkaline hydrates dissolve it instantly, and if not added in excess a large portion slowly crystallises out upon dilution. Strong ammonia solution dissolves but a minute portion, and is not affected by dilution.

In solutions of potassium, sodium, or ammonium carbonates it is quite insoluble.

Alcohol, rectified and proof spirits, ether, benzine, amyl alcohol, oils and acetic ether dissolve it most readily.

Turpentine and carbon disulphide are not good solvents. Petroleum dissolves but little when cold, more when hot, the excess crystallising upon the sides and bottom of the containing vessel as the solution cools.

Acted upon by chlorine or chlorine water, it is no longer soluble in alkaline solutions.

Boiled for a length of time with dilute acid, it does not yield a trace of glucose.

A minute portion of capsicin placed upon the tongue causes an agonising burning pain throughout the whole of the mouth, copious flow of tears and of saliva, and also of mucus from the nose.

Applied to the skin inflammation is speedily produced, but I have not succeeded in raising a blister.

Taken internally one-eighth of a grain gives rise to violent burning pains in the stomach, which are easily assuaged by the administration of demulcents.

REPORT ON THE LIMITED OXIDATION OF ESSENTIAL OILS.

PART IV.

By Charles T. Kingzett, F.C.S.

THE author has divided his report into three sections. In the first of these the study of the limited oxidation of turpentine is continued, upon observations made in experimenting upon 50 gallons of turpentine. He has confirmed each conclusion arrived at in his earlier researches, while specific matters have been more deeply studied.

It had been established by his former researches that turpentine, in common with all hydrocarbons containing cymene (paramethylpropyl benzene) as a nucleus, gives peroxide of hydrogen, among other products, by atmospheric oxidation. The theory propounded regarding this oxidation is referred to further on.

In the first part Mr. Kingzett draws attention to some physical changes affecting the turpentine while it undergoes oxidation. These physical changes concern the specific gravity and the boiling-point of the oil under treatment.

The boiling-point determinations here given were effected by distilling 100 c.c. of the oil and marking the temperature after each 10 c.c. was collected:—

	Original Oil	Oil after 22 hours' Oxidation	Oil after 27 hours' Oxidation
10 per cent. over at ..	157° C.	162° C.	165° C.
20 " " " " ..	159	165.5	166
30 " " " " ..	160	168	170
40 " " " " ..	160	171	171
50 " " " " ..	160.5	174	174
60 " " " " ..	—	181	185
70 " " " " ..	161	193	206
80 " " " " ..	162	210	—
90 " " " " ..	164	—	—
	166		

The next table shows the increase in the density of the oil as the oxidation progresses; but it is to be remarked that these various tables do not relate to the same experiment:—

In one case turpentine of specific gravity .864			
After 24 hours' oxidation had a specific gravity of .880			
" 28	"	"	.881
" 32	"	"	.888
" 44	"	"	.949

In another case the original oil had the specific gravity .864.			
After 16 hours it had a specific gravity of .888			
" 20	"	"	.899
" 26	"	"	.906
" 30	"	"	.913
" 46	"	"	.936
" 48	"	"	.947

These two experiments were conducted at 50° to 60° C., but the exact temperature differed. The increase in the specific gravity of the oil and the amount of peroxide of hydrogen produced along with camphoric and acetic acids, camphor, &c., depends upon many conditions affecting the temperature, the relative volumes of oil and water, the speed of the air-current, &c. The rate at which the peroxide of hydrogen forms is determined by estimating the latter from hour to hour. While it depends upon the conditions enumerated it is to be observed that fresh turpentine by itself does not oxidise at the same rate as that which has been in process of oxidation some time, but that by adding fresh oil to that which is in active oxidation there is communicated to it the impulse to change, so that it proceeds at the same rate. So long as the turpentine which is condensed from the escaping vapour, is returned to the oxidiser, or, what amounts to the same thing, so long as fresh turpentine is added as required, so long does the increase in amount of the peroxide of hydrogen and other bodies continue. Otherwise, if a certain amount of turpentine be oxidised to perfection, there comes a time when the amount of peroxide of hydrogen is at a maximum, after which it decreases at the same rate that it formed. But this, as stated, may be prevented by the addition of fresh turpentine from time to time, in which case the quantity of peroxide of hydrogen generated is only limited by the amount of the turpentine and the length of time during which it is submitted to oxidation.

The following figures give some idea of the gradual formation of peroxide of hydrogen in the aqueous solution under the oil of turpentine:—

	Grammes		
After 37 hours in 100 cc. there was contained	0.0651 H ₂ O ₂		
" 41	"	"	0.2000 "
" 54	"	"	0.3000 "
" 58	"	"	0.4550 "

From a knowledge of the bodies contained in the watery solution resulting from the oxidation of turpentine, the author was led to investigate its antiseptic and disinfecting powers, and after a great deal of study he had ascertained those conditions of experiment which lead to the most desirable result in preparing the solution. The antiseptic and disinfecting character proved to be so powerful as to warrant the manufacture of the solution under the name of "Sanitas." It may be described as a solution of an aromatic odour, perfectly volatile, containing nothing harmful to furniture or clothing; non-poisonous, and capable of yielding from one to three or more times its volume of nascent oxygen.

In Section II. of the Report Mr. Kingzett details a great number of experiments made with this body, and also with its known constituent (camphoric acid and peroxide of hydrogen), with the object of determining and illustrating their antiseptic and disinfecting character. It may be said, in short, that the solution represents the action of salicylic acid as an antiseptic and preservative, while it has unequalled powers as an oxidising agent.

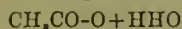
In Section III. of the Report he continues his more strictly scientific investigation. Incidentally it is observed that since his last publication Dr. Wright has shown that clove terpene C₁₅H₂₄ does not yield cymene C₁₀H₁₆ by bromination. He (Mr. Kingzett) had predicted this on the knowledge that clove terpene yields no peroxide of hydrogen by atmospheric oxidation. Some menthene (C₁₀H₁₈), furnished by Dr. Wright was found to give peroxide of hydrogen, acetic and formic acids, and other matters, when submitted to the method of oxidation already described. This fact would indicate the presence of cymene in this body as a proximate nucleus, and it was pointed out that Wright had not long before actually obtained cymene from it by bromination.

In short, the conclusion to be inferred from these researches is that hydrocarbons containing cymene as a proximate nucleus must give peroxide of hydrogen by limited oxidation, so that examination for the latter serves as a useful means of diagnosis between terpenes or cymene, and any polymeric modifications of them that may exist.

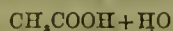
From the results attending the investigation the author was led to study the behaviour of the ethers when submitted to oxidation in a current of air, and although his experiments are but just commenced, they have proved that ethylic ether gives rise to the production of peroxide of hydrogen together probably (unproved yet) with acetic acid. His theory of explanation supposes that the ether first becomes acetic ether with the elimination of water; then by the absorption of more oxygen

the acetic ether becomes acetic peroxide, and this last finally being decomposed by water into acetic acid and peroxide of hydrogen. This production of peroxide of hydrogen must be regarded as, perhaps, the most direct evidence in our possession that the radical hydroxyl has a real existence in compounds, and the way in which M. Kingzett assumes it to be found is exactly parallel with the mode of producing it from terpenes, &c.

Thus terpene first becomes camphor, $C_{10}H_{16}O$, which corresponds to ethylic ether, and then by taking up more oxygen it becomes camphoric peroxide $C_{10}H_{14}O_4$, which in its turn corresponds to acetic peroxide. The camphoric peroxide gives with water peroxide of hydrogen and camphoric acid; the acetic peroxide gives peroxide of hydrogen and acetic acid. This last-named reaction may be thus expressed:—



becoming



In these researches is foreshadowed a means of classification of the terpene derivatives.

A short discussion followed the reading of this paper, taken part in by Drs. Redwood and Tilden, and Mr. Groves. The oxidised turpentine, Mr. Kingzett said, in reply to Mr. Groves, possessed decolourising as well as deodorising properties. In reply to Dr. Tilden, he said his experiments showed that the only change effected was the withdrawal of the oxygen from the air. A patent had been taken out for the product, which would shortly be brought before the public.

REPORT ON THE THERAPEUTIC VALUE OF THE ALOINS.

By W. A. Tilden, D.Sc.

DR. TILDEN described briefly the results of experiments which have been carried out by Mr. Nelson C. Dobson at the Bristol Infirmary and which were more fully described in the *Medical Times and Gazette* of August 12. Much difference of opinion and of assertion exists in regard to the aperient action of the aloins, some authorities declaring them to be the only active principle of aloes, while others have found them almost inert. Judging from 50 cases in the Bristol Infirmary in which the aloins were tried, Dr. Tilden and Mr. Dobson conclude that there is very little, if any, difference between the medicinal value of barbaloin, zanaloin, and nataloin; that none of them is inert; but that they do not possess any special properties which would distinguish them from aloes itself in like doses.

PROFESSOR REDWOOD said these observations in regard to the therapeutic action of the aloins had an interest to pharmacutists, as tending to show that certain products of the vegetable kingdom might be administered as well in their natural condition as in the form of alkaloids. Of course, though we had failed to obtain any therapeutic advantage, the chemical knowledge in regard to aloin which had been obtained was of great value, and we should not be discouraged in continuing to investigate for the active principles of other drugs.

MR. STODDART gave his personal experience. He had taken the aloins, with no effect, as had also his youngest son, 14 years of age. He had taken three, four, and five grains, but it seemed quite inert.

MR. PROCTOR had had a contrary experience.

MR. GROVES said these experiments only referred to the purgative properties of the aloins. It was well known that aloes with some people was likely to cause hæmorrhoids. In such cases in pil. rhei co. he had substituted the ext. aloes aquos for aloes. It would be interesting to know if by using the aloins the medical difficulty would be obviated.

THE SOLUBILITY OF CINCHONA PRINCIPLES IN GLYCERINE.

By F. Andrews, London.

A NOTICE of the solvent powers of glycerine upon Peruvian bark having lately appeared in the *Pharmaceutical Journal* and *THE CHEMIST AND DRUGGIST*, an account of a few observations made by myself, although very fragmentary and incomplete, may perhaps prove interesting.

Some months ago I had occasion frequently to mix tincture of bark with glycerine in equal proportions. As the mixture remained perfectly bright, it occurred to me that perhaps glycerine might prove as good a solvent of the active principles of cinchona as the spirit, and I therefore made the following experiment:—Four ozs. of yellow bark in coarse powder were mixed with four fl. ozs. of rectified spirit, and digested for several

days. The mixture was transferred to a percolator and spirit added until four ozs. of a very strong tincture of bark had passed through. This was mixed with an equal quantity by measure of glycerine, and the spirit evaporated. There remained four fluid ozs. of a thick syrupy liquid, dark brown in colour, and having the peculiar bitter and astringent taste of Peruvian bark in the highest degree: it was perfectly bright, and entirely without deposit, showing clearly that the glycerine had retained all that had been dissolved by the spirit. I then thought it would prove important to find whether there was anything left in the bark that could be extracted by glycerine, and therefore poured water into the percolator until upwards of eight pints had passed through, and the percolated liquid was colourless and tasteless. The apparently exhausted bark was then placed in an evaporating dish, and four fl. ozs. of glycerine stirred in. The mixture was heated slightly, and allowed to stand a day or two, again transferred to the percolator, and water passed through until about a pint of turbid brownish liquid was obtained. This was evaporated to four fl. ozs., the result being a dark brown syrupy fluid, having, of course, the peculiar taste of glycerine, but with very slight bitterness or a stringency.

Several experiments were then made by the direct action of glycerine upon bark. Percolation was tried, but the process was so slow as to be practically useless, and finding that quinia and its sulphate were soluble in warm glycerine, and were not precipitated from solution by the addition of water, the following was adopted as the best:—

Four ozs. of yellow bark were mixed with eight fluid ozs. of glycerine, heated for a short time over a water bath, and allowed to stand till cold: water was then added in successive portions, and strained out, until there appeared no extractive left. The whole was then evaporated to eight fluid ozs., the original bulk of the glycerine. This liquid, carefully made, appears to contain in each fluid ounce the whole extractive matter of half an ounce of bark, and might, I think, be appropriately termed glycerinum cinchonæ. Of its medical value it is not for me to offer an opinion, but two or three medical men to whom it has been mentioned think it likely to be very useful.

In conclusion, I must apologise for a very imperfect essay. I had intended to do much more, but have been prevented. However, the solubility of quinine in warm glycerine, and the extraordinary power possessed by the latter of dissolving the extractive principles of cinchona, are, I hope, facts of sufficient pharmaceutical importance to justify my little paper. I hope now some one more able will take up the subject, but shall try to return to it myself, and report progress at our next meeting.

PROFESSOR REDWOOD regarded this as a useful and practical paper.

MR. CLEAVER asked if the glycerine extract gave any precipitate when mixed with water.

MR. MARTINDALE referred to the formula in the United States Pharmacopœia, which he said somewhat resembled this preparation. The strength of that was 16 fluid ounces, equal to 1 lb. of the bark. He had found that product liable to gelatinise. It mixed tolerably well with water.

MR. ESKIN asked what particular bark had been used. He supposed the gelatinisation referred to by Mr. Martindale would be due to quinovic acid.

MR. ANDREWS said the preparation did precipitate when mixed with water, but to a very slight extent, not nearly so much as the Pharmacopœia liquid extract. The bark he had used was fully up to the Pharmacopœia standard. After extraction by glycerine there was a trace of bitterness left in the bark, but it was very slight.

ON ESSENTIAL OIL OF SAGE.

PART I.

By M. M. Pattison Muir, F.R.S.E.

THE sage oil examined had a brown colour, without any shade of green. On standing for some months it did not deposit any solid matter, neither was its original neutral reaction altered. Exposed to sunshine in contact with air, the oil absorbed oxygen readily and formed a substance which gave a blue colour with starch paste and potassic iodide. Concentrated nitric acid reacts with violence on this oil. Strong sulphuric acid appears to exert a polymerising action. Dry hydrochloric acid gas produces one, or perhaps two, liquid, but no solid, chlorhydrates. The specific gravity of the oil was found to be 0.9339 at 14° C.

After long continued fractionation the oil was separated into five main portions.

1. A liquid boiling from 156° to 158°.
2. A liquid boiling from 166° to 168°.
3. A liquid boiling from 198° to 203°.
4. A liquid, with green fluorescence, boiling above 240°.
5. A solid camphor-like body, deposited chiefly from those fractions of the oil boiling from 190° to 220°.

From the general reaction of the two first-named liquids, viz., their behaviour with bromine, with sulphuric acid, and with weak oxidising agents, it is evident these liquids represent two terpenes, probably of the formula $C_{10}H_{16}$. They both appear to contain cymene. They yield terephthalic acid in oxidation.

For the liquid boiling from 198° to 203°, which represents the oxidised fluid constituent of the oil, the name of *Salviol* is proposed.

The solid substance deposited from the fraction of higher boiling point presents many of the properties of ordinary camphor. It melts at 187° C.

NOTE ON THE BENZOATES IN SUINT.

By Andrew Taylor, F.C.S.

THE potash salts recovered from suint, the greasy matters washed out by water from wool, now constitute one-fiftieth part of their annual production. Little or nothing has been done to the commercial utilisation of the greasy matters themselves. Messrs. Schulze and Allrich extracted some very interesting constituents by alcohol, but the portion of the suint unattacked by this solvent consisted of benzoates. Desiring to obtain a large result, I employed an 80-gallon jacketed steam still, working at a pressure of 20 lbs. to the square inch, and distilled in it equal mixtures of petroleum spirit and suint, until I had operated on a ton of the latter substance. Suint is usually concentrated to 30° B., so it stands 15 lbs. to the gallon, and 150 gallons had to be gone through. I recovered nearly all my petroleum spirit, and, besides, a yellow fatty liquid. Every five gallons of suint used gave one of this fat: this is in the proportion of 30 gallons to the ton. On heating eight gallons of this fat in a steam jacket, after mixing about a gallon of hydrochloric acid, for about an hour and a half, during which the boiling shed was filled with ammoniacal and other vapours, I found remaining a brown liquid filled with benzoic acid crystals: the sides of the vessel were also covered with these shining needles. Fully three-quarters of a pound of dried substance was collected from the drainings and the sides of the vessel, or nearly three pounds to the ton of suint. I believe the whole benzoic acid was not collected, and from laboratory experiments I find the water washed from the wool yields nearly 3 per cent. more benzoic acid than the concentrated suint.

Whatever economic difficulties may surround the commercial recovery of potash salts from suint, such a ready source of benzoic acid ought to bring it into much more general use, especially as a preservative agent for organic substances. It might be easily collected at every sheep-washing station.

Professor REDWOOD said it was known that the benzoic acid of commerce was by no means so suitable for medical purposes now as formerly. For instance, that which is prepared in Germany from cow's urine retains most persistently its characteristic odour. The acid prepared according to the Pharmacopœia from the gum was the kind which was most fit for medicine.

A NEW BASIS FOR CANTHARIDES PLASTER.

By A. W. Gerrard.

IN a report upon the official plasters presented by me before the meeting of our Conference held in London in 1874, the cantharides plaster was omitted from the list, as my experiments upon it were not then concluded. Mr. T. Groves, who was the president of the Conference for that year, remarked in his discussion of my paper that the blister plaster was the only one in which he believed. I therefore thought it too important a matter to pass by, so am now in a position to lay the subject before you.

The basis of our present cantharides plaster, as is well known, consists of a mixture of wax, prepared suet, resin, and lard. In my experience with this the most important faults it possesses are insufficiency of adhesiveness and flexibility, so that after it has been spread a few days, and more especially during the winter months, it becomes brittle, cracks, and peels from the

surface of the material upon which it is spread. To surmount these objections it was necessary to alter the proportion of its present ingredients, or remodel it entirely. I chose the latter, considering the presence of a granular body like mutton fat quite unnecessary, and, in fact, to be the main cause of the objection urged. After numerous trials with mixtures of various proportions of wax, resin, fats, and oils, most of which answered my purpose but indifferently, Canada balsam was tried, and I found this, when mixed with wax and lard in the following proportions, gave a very good result:—

Take of

Cantharides in fine powder	..	..	..	..	..	..	Oz.
Canada balsam	..	..	..	..	..	..	6
Yellow wax	..	..	..	..	..	..	8
Lard	..	..	..	..	..	..	5
							1½

Dissolve the wax, lard, and balsam over a water bath; add the cantharides, and allow them to macerate at a gentle heat for one hour; stir till cooled. During the winter months the lard may be doubled with advantage.

In deciding upon the above proportions I have borne in mind that the plaster should be only just sufficiently adherent that on its removal from the patient the blister is not torn. Canada balsam, apart from its other properties, is, I consider, well adapted for the purpose for which I have chosen it, as being likely to aid the extraction of the cantharidine from the flies. Plaster prepared according to the above form has been on its trial for some time: it produces a good blister in from four to eight hours, and I have had no complaints with reference to it. I placed a small plaster of this formula and one of the B.P. upon my own arm, the former was seven hours, and the latter nearly eight hours, producing the desired result.

It has been suggested in preparing this plaster that an advantage would be gained by liberating the cantharidine after the following manner. Digest the powdered flies with caustic soda, cantharidate of soda is formed. Neutralise this with hydrochloric acid, cantharidine is liberated and chloride of sodium formed, which, on the drying of the flies, remains mixed with them, and is no detriment. I tried this experiment, but with no increased advantage.

The failure of the plaster from the bad quality of the flies I believe to be sometimes the case, and in this matter, if there is any suspicion, I think the microscope would prove a most useful assistant to the judgment of the chemist. The plaster may also produce no result from being insecurely applied, and sometimes the skin of the patient is of that nature that vesicants will not affect it: those are matters outside our calling. I have here endeavoured only to effect that which is within our control, and I believe the above form will be found an improvement on that to which we have been accustomed.

Professor REDWOOD presumed Mr. Gerrard's special object had been to produce a plaster for hospital use. He was not aware that it was customary for druggists to keep cantharides plaster ready spread. In that case the objection raised against the plaster of the Pharmacopœia, that it was liable to become brittle when spread, would hardly apply. The present form had been in existence so long, and had obtained so generally the confidence of medical men, that it would be difficult to change it. Still, it was no doubt satisfactory to have learned from Mr. Gerrard of a formula for a plaster which might be kept ready spread.

Mr. MARTINDALE said it would no doubt be an advantage if we had a plaster which might be kept ready spread. He referred to an American product which he had lately seen, which was on a sort of india-rubber fabric, and which might be doubled up or crumpled in any form without injury to the plaster. A mustard plaster was made in the same manner.

Mr. KINGZETT believed vaseline had been used in the preparation of this plaster.

Mr. PROCTOR said it was quite competent for hospitals to make such modifications in formulæ as had been suggested by Mr. Gerrard. The Pharmacopœia plaster was certainly somewhat crumbly, and if Mr. Gerrard's suggestion would improve it in respect to plasticity he thought a decided advantage would have been gained. One objection occurred to him, which was that a varying proportion of lard would be necessary, according to the temperature.

Mr. GROVES had not seen the American article referred to by Mr. Martindale, but he had found D'Albepyre's plaster very convenient for use as a blister. It was only necessary to cut from the sheet the size and shape required, and the blister was ready.

Mr. MACKENZIE asked if Mr. Gerrard's plaster would not be liable to run when applied to the skin. There was a want of some method of spreading blisters to supersede the present system, as usually adopted, of wetting the thumb and then spreading the blister. There was also no uniformity in the spreading. Sometimes it was on leather, sometimes on simple adhesive plaster, while it was generally also of various levels.

Mr. CURRIE said that the use of a little oil on the fingers was an aid to the successful production of a blister.

Mr. RIMMINGTON recommended the use of a spatula slightly warmed, with firm pressure of the thumb.

Mr. H. LONG was doubtful if it was advisable to give an adhesive margin to blisters. The object was to raise a blister, and the rising of the skin was necessarily impeded by the fixed bandage occasioned by the adhesive margin.

Mr. GERRARD, in reply, said his object had not been merely to provide a plaster for hospital use. In remarking on his paper on plasters last year, when President, Mr. Groves, had mentioned that emp. canth. required improvement, and this had led him to turn his attention to it. He failed to see the objection to the addition of a little lard in winter. It was easy enough and was frequently done in the case of ointments. Variations like this had to be made for differing climates. There was an objection to Albespyre's plaster that it adheres so strongly that it frequently tears the blister in the attempt to remove it. As to the material on which a plaster should be spread, this should certainly be calico, no other fabric possessing the same flexibility. There was no occasion to use the fingers to spread the plaster in spreading if the plaster were slightly warmed; a spatula is preferable. The plaster prepared according to the formula suggested to him did not run in the least when applied to the skin.

A PROPOSED SOLUTION OF CITRATE OF IRON AND QUININE.

By J. F. Brown.

The writer was attracted to this subject by the great importance of the citrate, and the difficulty of testing its quality.

The latter has been partly removed by researches quite recently published, but two years ago it existed in great force. A solution containing five grains to the fluid drachm was then prepared, and found to keep well with either sugar, glycerine, or chloroform as preservatives, chloroform in the proportion necessary to form chloroform water, being most convenient.

The propriety of adding the quinine still moist to the solution of citrate of iron, and of allowing the latter to cool before such addition, was adverted to, as well as the saving of time and labour effected by more copious dilution of the ammonia.

When operating on the quantities officially ordered the ammonia should be diluted to rather more than the volume of the citrate solution, then added to the latter in a half-gallon bottle, with brisk shaking. Make up the volume to 49 fluid ounces with water, add 2 fluid drachms of pure chloroform, and shake briskly at intervals for 24 hours.

The solution does not acquire its characteristic greenish hue for some days.

As compared with sealed preparations this solution gave very different results when tested, both by the B.P. and by the ether tests.

A calculation of the quantities of its different components, and a formula deduced from them, concluded the paper on this subject.

Professor REDWOOD said he did not exactly see the object of the solution suggested by Mr. Brown. If it was intended to keep it for dispensing purposes, he should say the presence of chloroform would be a decided objection.

Mr. CLEAVER supposed Mr. Brown's object was to meet a desire to get a solution of citrate of iron and quinine which could be preserved. Most druggists made a point of keeping this preparation in solution. He had himself made large quantities, but without any addition a formation of sulphur always resulted. He had found a small quantity of sulphuric acid to the solution a good preservative. He would here remark that in preparing the scales of citrate of iron and quinine care should be taken not to add the quinine until the iron was perfectly dissolved. Otherwise a most manageable basic salt appeared to be formed.

Mr. GREENISH always kept a solution of citrate of iron and quinine, but did not find it keep long.

Mr. KEMP said he had found that by adding about four grains of citric acid to the fluid ounce of liquid he got a solution of one drachm in four ounces, which kept quite well.

Mr. A. H. ALLEN remarked that the solutions of some substances, as, for instance, tartaric acid, acetate of sodium, and others, kept better if they were made very strong. This might be the case with the preparation in question. The speaker then went on to comment on the test given in the Pharmacopœia for the estimation of the quinine in citrate of iron and quinine (precipitation of the quinine by ammonia). This he regarded as accurate, and he recommended in its place the perfect extraction of the quinine by means of chloroform or ether.

Mr. RIMMINGTON said a solution of one part of the salt in two parts kept very well.

Mr. SMITH and another speaker confirmed this.

Professor REDWOOD said he had had some experience in making his solu-

tion, and quite coincided, in regard to the strength, with Mr. Allen, Mr. Rimington, and others who had spoken. Concerning the Pharmacopœia test, he reminded Mr. Allen that the object was to give a test which every pharmacist might readily apply. It was only intended to be an approximate estimate, and had been decided upon after many experiments. Practically it did afford reliable proof of the proportion of quinine. He hoped the time would come when the Pharmacopœia preparation would be the only one used. The variations in strength had not been occasioned so much by pharmacists as by medical men, many of whom had been in the habit of using, and preferred, a salt with less quinine, and this weaker preparation had gradually found its way into commerce.

Mr. GROVES asked the President whether, in weighing the quinine after precipitating and washing it, it was his plan to remove it and dry it before weighing.

Professor REDWOOD said it was only necessary to let it drain on the filter—nothing more.

PRELIMINARY REPORT ON THE CHEMICAL CONSTITUENTS OF THE IVY.

By Robert H. Davies, F.C.S., and Mr. Hutchinson.

THE authors state that they have not yet decided by direct investigation whether ivy seeds do or do not contain the alkaloid hederine, which Chevalier and Vaudamme stated they had found. They consider, however, that the statement is an error, and they propose on a future occasion to give the results of their examination on the point. The principal part of their work so far has been upon what is regarded as the most important constituent of ivy seeds, and was named in 1849 by Professor Posselt, its discoverer, hederic acid.

This they do not believe to be an acid, the property which Posselt found its alcoholic solution possessed being considered due to the difficultly separable hederitannic acid. The pure substance in solution does not affect litmus. Moreover, they state that it is identical with the substance described by Dr. F. A. Hartsen as a new body from the leaves of *Hedera helix* in the *Archiv. der Pharmacie* for April, 1875.

This so-called "hederic acid" was prepared by them by treating ivy berries with ether till nothing more was dissolved, then boiling in methylated spirit. The tincture, concentrated, yielded it in an impure state on cooling. This was purified by repeated solution in hot alcohol and boiling with animal charcoal, and finally washing with ether. The substance obtained is a light, white, uncrystallisable powder, slightly soluble in ether, more so in cold alcohol, very soluble in hot alcohol, and to a very slight extent in benzene, carbon disulphide, chloroform and water. It resembles saponin somewhat, for if its alcoholic solution be largely diluted with water the liquid froths strongly upon agitation.

When treated with sulphuric acid this substance develops in a few minutes a splendid violet colour, and if this violet liquid be diluted with water a brown-green matter is thrown out, soluble in alcohol or benzene, and differing further from the original substance in giving the violet colour *instantly* if touched with sulphuric acid.

In hot nitric acid this substance dissolves, with formation of a nitro compound, which may be separated, by diluting the solution with water, as a yellowish white powder.

By strong ammonia the so-called hederic acid is dissolved, and upon diluting slightly a gelatinous mass separates, which the authors have not yet further examined.

So-called hederic acid consists wholly of carbon, hydrogen, and oxygen. Its formula remains to be determined after combustion.

NOTE RESPECTING THE STRENGTH OF SYRUPUS PHOSPHATIS COMPOSITUS (PARRISH).

By W. L. Howie, F.C.S.

THE object of this paper, Mr. Howie said, was not to bring forward any new fact, but simply, by introducing the discussion, obtain an expression of opinion from the Conference which he hoped would have weight with the trade and remove the existing doubt regarding what should be considered the strength of this popular remedy.

Parrish, in his "Practical Pharmacy," attaches to the original recipe the statement that "each teaspoonful of the syrup contains about two and a half grains phosphate of calcium and one grain phosphate of iron," and this has been adopted by

various writers on the subject, so that the question seems, at first sight, a simple one, but on considering the quantities of iron and lime salts ordered by Parrish in relation to the bulk of the finished product we find this strength absolutely impossible.

In the paper "On Phosphate Syrups," published in the journals last April, Mr. Howie was at some pains to state the matter as clearly as possible. Since then three papers have appeared on the subject, two of which, in the question of strength, fall back on the statement the accuracy of which is questioned: the third seems to accept the result of the formula as the standard, and many others hold the same opinion. For the sake of those who may not have read the former paper, Mr. Howie stated the more important points. In Parrish's formula there are ordered 10 drachms sulphate of iron, which would produce 257.5 grains triferrous phosphate were none wasted in following the process; and the finished syrup measures 45 fluid ounces. This only equals .715 grain per fluid drachm, and allowing for loss by imperfect precipitation, we have almost exactly half a grain (.501) per fluid drachm. Again, 12 drachms phosphate of calcium give exactly 2 grains per fluid drachm, and this makes no allowance for moisture present in all commercial samples, nor loss in re-precipitation. The syrup, therefore, prepared according to Parrish's own directions, cannot contain as tribasic phosphate the quantities of lime and iron which he asserts, but something less than 2 grains of phosphate of calcium and half a grain phosphate of iron per fluid drachm is the extreme result of the formula. This same error is reproduced in the "Companion to the Pharmacopœia," by Peter Squire, whose firm has long prepared what is known in this country as the genuine syrup, an examination of which bears out what has just been stated. With the view of still further sifting the matter, Mr. Howie procured several sealed bottles of the syrup direct from Parrish's pharmacy in Philadelphia, but the quality was very poor, as may be judged from the following table:—

Parrish's Syrup—Strength per Fluid Drachm.

	Sp. Gr.	Total Iron calculated as $\text{Fe}_2\text{P}_2\text{O}_8$	Phosphate of Calcium (indefinite)	Hydro- chloric Acid
		Grains	Grains	
English	1.320	.447	1.37	None
American, No. 1 ..	1.212	.160	0.87	present
Do., No. 2	1.235	.200	1.06	present

The label, however, makes no allusion to the strength, and the negative evidence which may be deduced is that no attempt is made to approach Parrish's statement.

It might be asked, Why not discard Parrish's recipe altogether, and found a new formula on the statement of strength? By so doing we would produce a new syrup—not Parrish's—and though quite possible to make a syrup of this extreme strength, it must be borne in mind that its popularity depends, to a great extent, on its palatable character, and that, being generally prescribed for children and young persons, the dose would often be a fraction of a teaspoonful. This latter argument does not apply to the B.P. phosphate of iron syrup nor to Easton's, so that the formula for these might be improved up to the stated strength; besides, Easton's syrup is very seldom prescribed for any but adults. The author, therefore, considered that the strength of one grain of iron and two and a half of lime per fluid drachm rests only on a loose and inaccurate statement, which, unless care be taken, might be made a point in a prosecution under the Sale of Food and Drugs Act, and the sufferer be one who, on the best evidence and believing he was doing best for both physician and patient, had closely followed the originator of the formula.

Mr. SCHACHT said that when Mr. Howie's paper on the phosphate syrups appeared he had himself been working on the same subject, and his conclusions exactly coincided with Mr. Howie's. He thought it was very desirable to come to a definite understanding in regard to the strength of the syrup, and he regarded Mr. Howie's suggestion as a very sensible one.

Mr. Ekin asked what acid Mr. Howie recommended. Parrish's formula was not generally followed. Some formulas gave glacial phosphoric acid, others hydrochloric with syrupy phosphoric acid. He believed the latter to be preferable, especially in respect to taste.

Mr. HOWIE said the question he had treated was in regard to the strength, and not as to the formula. Hydrochloric acid would certainly keep the phosphates in solution.

Several speakers remarked on the variation in results of this syrup even

when the same formula was adopted. They considered this was due to differences in the sugar.

Mr. GREENISH said he had tried every published formula, and modifications of these, but without being able to produce a thoroughly satisfactory syrup.

Mr. SCHACHT: Perhaps you have tried to get a syrup of the strength of one grain to the drachm?

Mr. GREENISH: Certainly.

Mr. BORLAND had been making experiments with the view of adding ferrous phosphate direct to the syrup, before oxidation could take place. He made a solution of calcium phosphate in tribasic phosphoric acid, added sulphate of iron in solution, filtering out the sulphate of lime precipitated. He had only made the B.P. syrup by this process, and being undisturbed it kept free from precipitate.

Mr. GREENISH said his son had been making experiments in the same direction, and he knew that his opinion was that the result would be satisfactory.

Mr. GILMOUR said he had not tried this method, but he found the formula founded on the process of the French Codex was very satisfactory. He had set aside some syrup of the British Pharmacopœia strength prepared in this manner, and it showed no deposition.

Mr. HOWIE said he had found that the sugar used was a very important point. The kind known as Martineau's London loaves, or else Finz crystals answered best. He failed to see the objection to an agreement to the lower strength, because, as had been shown, this was the actual strength now generally employed. If we made a syrup equal to nominal strength given by Parrish that would really be the new syrup. He was aware that a good syrup might be made, as Mr. Gilmour stated, the process of the French Codex. He thought it would be very desirable to avoid the present confusion by settling the strength a little more definitely.

FILTERING PAPERS.

By Thomas Greenish, F.C.S.

WHILST engaged in examining some of those fungoid substances which every now and then make their appearance in solution kept by pharmacists, either for convenience in dispensing or other purposes, I have found on several occasions that the fungus had formed around a fibre, the presence of which in the filtrate was due to the paper through which the solutions had passed.

The paper used was the circular grey foreign filter paper.

The white unsized filtering papers may be classed under Swedish, Rhenish, English, and Scotch. Sweden has obtained a reputation for filtering papers. Its manufacture has long been in the hands of one family. The supply, however, is not equal to the demand for it; consequently there is an inquiry for other papers to supply its place. The Swedish filtering paper is composed of flax fibre, and the fibres are very much crushed and broken. The linen had evidently done duty elsewhere in the rag before it found its way into the paper. The fibrillæ of the broken fibres serve to fill up the pores, and prevent solids passing through the paper.

The next paper is the Rhenish. This competes with the Swedish: it is a flax paper, but more fibrous in its structure and consequently less dense than the Swedish; this is due to the fibres being less broken and crushed. The absence of much fibrillæ would render such a paper quick in filtration, but not so satisfactory in results as the Swedish.

The English white filtering papers have a little cotton mixed with the flax, and the fibres are very much crushed and torn. These papers differ more in their physical characters than in their composition.

The foreign grey filtering papers are of a more composite character, and have in their composition a considerable quantity of wool, said to be used to render the paper absorbent. Much of this wool is coloured, and has evidently done previous duty in some textile fabric. I have also found in some samples, in addition to this dyed wool, fibres of jute and esparto, unbleached and mixed with other fibres—in fact, to the microscope interested in fibres it is a kind of curiosity shop. It is evident that these papers must be very unsuited for alkaline solutions and others which will suggest themselves to the pharmacist, and it is not difficult to understand that from the heterogeneous character of the material from which filtering paper of this kind is made that it may be the source from which certain impurities find their way into delicate solutions.

It is extremely difficult to determine the fibres crushed and torn as they exist in these papers. A flax fibre whose crushed resembles that of cotton, and it requires to be treated further to establish its identity. Again, the same fibre bruised only resembles the hemp fibre. The wool is not usually much

injured, with this exception, that the characteristic imbrications are sometimes nearly all obliterated.

Mr. Greenish showed a specimen of Japanese filtering paper, more as a curiosity than with any practical object. It was a paper with very coarse meshes. "I do not know," he said, "what the Japanese can use it for. It appears adapted only for filtering flies out of a syrup. It is prepared from the liber tissue of the mulberry."

Professor REDWOOD said Mr. Greenish's paper was a very interesting one to all pharmacutists. He thought, however, it seemed to indicate that the results referred to were most likely to be produced by the commoner kinds of paper. He (the speaker) hardly thought Mr. Greenish had produced sufficient evidence of this. The very best papers, even those used for the printing of high-class illustrated works, were liable to develop a fungus kept for a long time in a damp atmosphere. This was well known in large printing and paper works. In old books a brown spot would occur on a page and would gradually permeate all through the work. This was often supposed to be due to the ink, but it was really a fungoid growth. He could think that the best filtering papers were as liable as the commoner kinds to the effects which Mr. Greenish had observed, no doubt correctly. Mr. GREENISH stated in reply that the papers mentioned by Professor Redwood contained "size," and to it the decomposition alluded to by him was generally attributed, but the unsized papers were free from that disturbing element.

NOTE ON THE CONDITION IN WHICH SALICYLIC ACID IS SECRETED BY PATIENTS.

By F. Baden Benger, F.C.S.

The author had examined the urine of a patient who had taken 10 grains of salicylic acid during the previous 12 hours. It was found to exert no retarding action on the production of essential oil of mustard or oil of bitter almonds, and not to hinder in the slightest degree the action of half a grain of cast on 40 grains of sugar dissolved in one fluid ounce. Five fluid ounces were concentrated, and washed with ether, the ethereal solution evaporated to dryness, and the residue dissolved in one fluid ounce of sweetened water: to this half a grain of cast was added, and fermentation immediately commenced. Parallel experiments were made with solutions containing known quantities of salicylic acid for comparison. The conclusion arrived at was, that, at all events in the case under observation, salicylic acid was not excreted in an active condition.

Salts of salicylic acid had been stated to possess no antiseptic power, but the author had observed that five grains of salicylate of soda prevented the action of half a grain of yeast on one fluid ounce of sweetened wine or water.

FURTHER EXPERIMENTS ON THE ANTISEPTIC ACTION OF SALICYLIC ACID.

By John C. Hunter, A.P.S.

SINCE the discovery of the antiseptic qualities of salicylic acid Professor Kolbe, and his publications concerning it, the minds of many scientific men, both at home and abroad, have been turned towards it for the purpose of assigning to it its place among the other known and well-tried antiseptics, such as carbolic acid, creosote, chromic acid, boracic acid, &c.

The solvent used for the purpose of allowing water to dissolve more than 1 part of the acid in the 1,000 parts of water was a state of ammonium.

Formula: Citrate of ammonium, 120 grains, dissolved in 1000 parts of water; then add salicylic acid, 60 grains. This gives a solution containing 1 part acid to about 100 parts water.

The experiments on ginger cordial with salicylic acid as a preventive of fermentation gave negative results, for all the solutions experimented upon fermented.

My own experiments on lime juice confirm those of Mr. Baden Benger, and on making up the syrup of lemon (B.P.), 5 grains of salicylic acid be added to the pint of lime juice used in making it, it will keep fresh for an indefinite period.

Grape juice was experimented with salicylic acid as a preventive of fermentation, and the results were all confirmatory of those contributed on the subject by Professor Neubauer, of Bresbaden.

One sample of grape juice, containing 15 grains salicylic acid to the pint, after 9 months' exposure to the air, has fermented no alcohol.

Four other samples of grape juice, containing 10, 15, and 20 grains of salicylic acid to the pint, are, after two months'

exposure, still quite fresh and sweet. These experiments prove that it will become useful to the wine producer for preventing further fermentation of wines.

The results of my experiments with it on the infusions of the Pharmacopœia are similar to those given at the Conference last year by Mr. Baden Benger, but I am of the opinion that its adaptability for preserving them is not so great as alcohol when we take into consideration the many substances used conjointly with them that would destroy or neutralise its antiseptic action.

Mr. Siebold mentioned his objection to its use when prescribed with salts of iron by the purple solution it would produce, and as many medical men prescribe the infusions of the Pharmacopœia, combined with alkalies, such as bicarbonate of potash, bicarb. of soda, liquor potassæ, &c., and as the salicylic acid would combine with these and form salts which have very feeble antiseptic qualities, hence the infusions so preserved would, in all probability, begin to ferment as soon as that change took place, and the patient would find the mixture which he had obtained from his chemist beginning to turn sour, and a mucus form on its surface before it was finished.

The last series of experiments undertaken by me were to determine its antiseptic power, when compared with carbolic acid and creosote, in preventing the decay and subsequent formation of animalcules in infusions prepared for their production.

Three infusions of hay were prepared, one containing carbolic acid, one salicylic acid, and one neither salicylic nor carbolic, and it was found that the salicylic acid prevented the decay, and consequently the formation of animalcules, for a longer period than the carbolic acid.

Four infusions of turnip were prepared, and three of them had added equal quantities of creosote, salicylic acid dissolved in ammonium citrate solution, and salicylic acid alone. The two first gave way and generated animalcules, whilst the infusion that contained the pure salicylic acid had not decomposed, nor had it generated any animalcules, after a lapse of 16 days; but of the two infusions containing no preserving agent, one of hay and the other of turnip, had generated plenty of infusional animalcules, the hay in 36 hours and the turnip in 3 days.

All these experiments go to prove that it is more powerful to prevent the formation of infusional animalcules than either carbolic acid or creosote, when these are taken in the same quantities as the salicylic acid, and exposed also to the same conditions.

In conclusion, the author had found it a good preserver of vegetable tissue used for microscopic mounting.

Mr. BENDER showed some samples of infusions, preserved by the addition of a $\frac{1}{2}$ grain of salicylic acid to the ounce, the same which he had exhibited last year at Bristol. Some had kept very well, but all those which he had preserved with benzoic acid had kept perfectly. He further remarked that some lemon juice and mucilage which he had similarly treated had kept fairly well. Salicylic acid, he had found, did not check the action of yeast on sugar so well as benzoic acid. He had found it necessary to use a larger quantity.

Professor REDWOOD asked Mr. Hunter why he used citrate of ammonia as an aid to the solution of salicylic acid? Why did he give the preference to that over borax?

Mr. EGIN said that he had made some experiments with salicylic acid in the preservation of milk, and he found it inferior to both boracic and benzoic acids. Boracic gave the best results.

Mr. GROVES remarked that it had been stated that some samples of salicylic acid contained benzoic acid.

Mr. SAVAGE would like to know from Mr. Ekin how he added salicylic acid to milk. Did he use any preliminary solvent?

Mr. EGIN said he dissolved it directly in the milk in the proportion of 1 oz. in 100 gallons of cold milk. Milk so prepared would keep quite well for two or three days.

Mr. SAVAGE said he knew that some milkmen themselves used it, and he thought that it was an advantage to do so, especially for milk that had to be sent long distances. It could hardly be injurious.

Professor REDWOOD asked Mr. Ekin if he had compared boracic acid with borax.

Mr. EGIN: No, sir.

Mr. PROCTOR: I should like to put the same question to the President.

Professor REDWOOD: I have tried both, and find borax to be the most effectual.

Mr. ANDREWS had known subcarbonate of potash used for the same purpose.

Mr. FAIRLIE mentioned that in mixing in a mortar equal quantities of borax with the artificial salicylic acid the powders became quite soft and damp, and afterwards hardened into a brittle lump. Perhaps this could be explained.

Mr. HUNTER, in reply to Dr. Redwood's question, said the reason why he preferred citrate of ammonia to borax was on account of its tastelessness. In the case of lemon juice, for example, this was a desirable quality.

NOTE ON SALICYLATE AND SULPHOSALICYLATE OF SODIUM.

By John Williams, F.C.S.

SALICYLATE of sodium has been much employed lately as an internal remedy.

It is made by neutralising a solution of salicylic acid with caustic soda and evaporating to dryness. It can be purified by crystallisation from alcohol: the crystals found are, however, very small and indistinct, and this method of purification is not generally adopted.

Complaints have appeared in the medical journals that the salt sometimes produces irritative effects when administered medicinally, and it has been suggested that probably a trace of carbolic acid may occasionally be retained by the salicylic acid made by artificial means, and thus the salt prepared from such acid be impure.

An examination of the salicylic acid made from carbolic acid by Kölbe's process soon proves that the product is not always to be depended upon as a pure homogeneous article; indeed, it can hardly be otherwise when we consider that the carbolic acid from which it is made is itself not an absolutely pure or definite article. Still I must observe that the salicylic acid now being supplied is much purer and more definite than that which was at first sent into the market by the German makers.

Thus salicylate of sodium made from the artificial acid, and from the great difficulty of purifying it by recrystallisation, is liable to be more or less impure and indefinite in composition. It thus appears desirable, if possible, to obtain a salt which can be purified and obtained of definite constitution.

Sulphosalicylic acid appeared to offer such a compound. It was discovered many years back by Cahours, and has been further investigated by Mellins. The process described for its production is, however, one of considerable practical difficulty.

The vapour of anhydrous sulphuric acid is passed over salicylic acid kept cool: gradually a sticky, gummy mass is produced, which contains the new acid, and can be separated by appropriate means.

I have made several attempts to produce this conjugated acid by means of ordinary sulphuric acid, and have at length succeeded in doing so, but not without several failures. I find the following process to answer.

The salicylic acid must be very pure: the unpurified commercial acid, when treated with sulphuric acid, simply yields a black mass, giving off sulphurous acid, and yielding no sulpho-salt capable of giving definite crystals.

If pure acid is employed, then about twice its weight of sulphuric acid is quite sufficient. The mixture must be gently heated in a sand bath up to about 100° C., when action will commence in the liquid, and considerable heat be developed. The heater must be removed from the sand bath, and the contents stirred so as to regulate and keep down the temperature, but the cooling must not be sufficient to altogether check the reaction. If the temperature exceeds the proper point, little or no sulphosalicylic acid is produced, but apparently bisulphocarbolic acid, which does not yield definite crystallisable salt.

When the reaction has been properly maintained, at the end of ten minutes or a quarter of an hour the temperature begins to fall, and in a short time the whole becomes a solid mass, generally of a light brown colour: this will speedily deliquesce if left exposed to the air, but it can be dissolved in water at once, and treated with carbonate of barium in the usual way. I may mention that as the sulphosalicylate of barium is not a very soluble salt, it is necessary to employ a considerable quantity of water, and filter the liquid while still hot. This solution of the barium salt, decomposed by an equivalent quantity of sulphate of sodium, yields a solution of the sulphosalicylate of sodium, which upon evaporation to a small bulk yields crystals: these crystals must be pressed from the mother liquor, and purified by recrystallisation two or three times from hot water.

When pure sulphosalicylate of sodium forms hard white prisms: it is not deliquescent, although very soluble in water and insoluble in alcohol, having no caustic, but a slightly bitter, taste, and altogether a salt well adapted, I think, for medicinal use.

Salicylic acid and its salts give, as is well known, a striking reaction with perchloride of iron, producing a dark purple colouration. The sulphosalicylates produce exactly the same reaction, proving that the salicylic acid radical is still intact in these compounds, and it is fair to infer that the medicinal properties of these sulpho-salts will be found in practice to be identical or perhaps superior to the simple salicylates.

We have in the analogous case of the carbolate and sulpho-carbolate of soda an instance in which the sulpho-salt possesses great advantage over the simple salt, and such may prove to be the case with the sulphosalicylates.

The acid itself is crystallisable, but deliquescent: the zinc salt is also very deliquescent. I have not paid any attention to the other salts as yet.

Mr. BARCLAY asked what degree of solubility ought the sulpho-salicylate of sodium to possess. He said it was a good deal prescribed in Birmingham, generally in combination with sp. ammon. co. or liquor potassæ.

Mr. WILLIAMS said the salt was an exceedingly soluble one.

Mr. MASON said he had met with a specimen of foreign origin which was very insoluble.

THE STRENGTH OF TINCTURE OF NUX VOMICA.

By L. Siebold.

THE author had noticed a striking difference in the opalescence produced by the addition of water to tincture of nux vomica obtained from different establishments, and also a difference in the degree of bitterness. To explain this variation he examined 10 specimens of tincture obtained from pharmacists of good reputation. The solid extract obtained from these by evaporation was in the following proportions per 1,000 c.c.:—No. 1, 2.7 grms.; No. 2, 2.9 grms.; No. 3, 4.0 grms.; No. 4, 4.3 grms.; No. 5, 5.5 grms.; No. 6, 8.9 grms.; No. 7, 9.0 grms.; No. 8, 9.6 grms.; No. 9, 9.6 grms.; No. 10, 10.1 grms. Tinctures made especially to discover what the proper strength should be yielded 9.5, 9.9, 10.0 and 12.0 grms. of extract respectively. The strongest was made from exceedingly fine powder. It was probable that the real cause of the great discrepancies alluded to might be found in the different degrees of fineness of the powder employed. Nux vomica is a tough substance to deal with, and it is no doubt used in many instances without being reduced to a sufficiently fine powder.

Absolute uniformity of strength in tincture of nux vomica would, of course, be obtained by preparing it from a definite quantity of the alcoholic extract. The author also believes tincture of nux vomica to be a weaker preparation than is generally supposed. The B.P. dose (10 to 20 minims) is very small as compared to that of the extract. He had repeatedly taken a 60 minim dose of a full strength tincture without perceiving any effect.

Professor REDWOOD said there was a point to which Mr. Siebold had not referred, and which might account for the discrepancies observed in certain tinctures of nux vomica. They might be due to adulteration of the powdered nux vomica, the drug being seldom powdered by pharmacists themselves, in consequence of the difficulty of reducing it. He had himself found what seemed to be considerable adulteration in specimens of the powder which he had examined. His attention had been directed to this subject in consequence of an application he had received from a drug grinder who wished to know what was best to mix with nux vomica to facilitate the powdering. Formerly, he believed, it was considered in the trade absolutely necessary to add some extraneous substance; but he believed that now the process recommended in the Pharmacopœia of softening by steam and rapid drying was generally found sufficient.

Mr. GREENISH remarked that this tincture was another illustration of the desirability of describing more definitely by a system of sieves the degree of fineness of powders ordered in the Pharmacopœia.

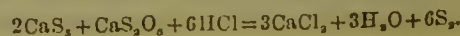
Mr. PROCTOR thought it would be well to ascertain from Mr. Siebold the source of the powders used in these tinctures. It might happen that a powder prepared by a pharmacist himself would not yield so strong a tincture as the powder produced by the drug grinder, in consequence of the difficulty of obtaining a sufficient degree of comminution.

Mr. BENDER believed that all the powders had been prepared by Mr. Siebold himself. He knew most of them had been. Mr. Siebold had noticed the adulteration referred to by Professor Redwood.

NOTE ON THE PREPARATION OF SULPHUR PRÆCIPITATUM.

By L. Siebold.

MOST chemical handbooks represent the decomposition occurring in the preparation of precipitated sulphur by the following equation:—



The author believed this equation did not accurately represent the facts. The decompositions do not occur simultaneously, but the pentasulphide is first decomposed. It might not be generally known that the sulphur precipitated from the hypsulphite differs in physical characters from that obtained during the decomposition of the pentasulphide; it is coarser, heavier, and darker in colour. By using only so much hydrochloric acid as will precipitate the sulphur from the pentasulphide, the resulting preparation will be found to be much superior to that obtained by the B.P. process. It is a pale yellowish white, thoroughly uniform, fine powder, consisting entirely of perfectly round, smooth globules; it is sure to be free from arsenic, and can never contain any persulphide of hydrogen.

Professor REDWOOD said Mr. Siebold's suggestion was certainly worthy of consideration. His paper was perhaps still more useful as indicating a probable source of impurity of precipitated sulphur. It might be that manufacturers could not be induced to go to the extra expense necessary to carry out this process. The President remarked that in discussing this paper it was not necessary to go into any collateral question. The subject related exclusively to the purity of precipitated sulphur.

Professor ATTFIELD had hoped that Mr. Siebold would have tried to ascertain what was the real character of the decomposition which occurred in the preparation of precipitated sulphur. It had been stated by the president of the Chemical Society that if any gentleman desired to find a subject for research he could not do better than question the first chemical equation he might meet with in any manual of chemistry. It would frequently be found that the equation given by the bookmaker on the authority of some investigation was prefaced, if we turned to the original author, by some such remark as that, "the following *may* perhaps represent the decomposition which occurs." These equations were not to be taken for granted, and their investigation would often lead to useful results.

Mr. KINGZETT confirmed these remarks by one or two further illustrations.

PEKOE FLOWER; OR HAIR OF THE TEA LEAF.

By T. B. Groves, F.C.S.

The author explained that some notes which he had expected on this subject had not come to hand, therefore he was unable to present the paper announced in his name. The circumstance which had brought this subject to his notice was this: He had with him a sample of "Pekoe flower," which had been taken from a chest of 100 lbs. which had arrived at Weymouth for export to the Channel Islands. The Custom House officials, being unacquainted with it, had stopped it and sent a sample to the chemist of the Custom House in London, who stated that it was the pollen of tea. He (Mr. Groves) had also examined it, and came to the conclusion that it was composed of the small hairs from the under side of the tea leaves.

Mr. GREENISH said he had also lately received a sample of a similar product. It was handed to him with a request that he would state whether it was animal or vegetable substance. On examining it by the microscope he noticed some cellular tissue attached to the base of the hairs, and he ultimately returned the substance, stating that it was composed of the hairs from Pekoe tea leaves. Pekoe was the name given to the very young leaves of the tea plant, gathered in early spring, and the youngest and unexpanded leaves, shaped like a pod, and covered with hairs, are called "Pekoe tips." These hairs were originally white, but they became covered in the drying room with a sort of dust, which seemed to be a decomposing vegetable matter, and which gave them the brown appearance they now possessed. Mr. Greenish added that he had corroborated his observations by examination of the tea plant at Kew, and he also said he believed it was possible to identify even broken tea leaves with certainty by the peculiar microscopic structure of these hairs, together with the characteristic stomata, and the cells immediately surrounding them.

When the scientific business was concluded, Professor ATTFIELD, in the name of the Conference, handed to Mr. Fairlie, for the Glasgow Chemists' and Druggists' Association, the books which had been purchased out of the Bell and Hills Fund.

Mr. FAIRLIE expressed the thanks of the association, and remarked that he feared these were a little too handsome to go with those already in the library.

Professor ATTFIELD then read a letter which had been received from the Secretary of the Plymouth, Devonport, and Stonehouse Chemists' and Druggists' Association (Mr. Robt. J. Clark), inviting the Conference to visit Plymouth in 1877, in company with the British Association. He moved that this invitation be accepted. Mr. Jones (Leamington) seconded the proposal, and it was carried unanimously.

Mr. SCHACHT then proposed a vote of thanks to the Glasgow local committee, warmly expressing the obligations of the

Conference to those gentlemen. Mr. Williams seconded the motion, and Professor Attfield supported it.

Mr. FRAZER, in replying for the committee, said there were more things than a shilling which had two sides. If the local chemists and druggists had sacrificed a few half-hours, this was nothing in comparison with the benefit and pleasure they had derived from the visit of the Conference.

Mr. KINNINMONT, in replying, said he was proud that so large a number had come from long distances to attend this Conference.

Mr. STANFORD was also called for, and responded briefly.

Mr. GILMOUR proposed a vote of thanks to the President. He remarked on the ability with which Professor Redwood had invariably brought forward the pharmaceutical points of every paper read, however scientific it might have seemed.

Mr. PROCTOR seconded this, and it was carried with very loud applause.

Professor REDWOOD having acknowledged the compliment, the meeting came to an end.

The following are the officers of the Conference for the ensuing year:—

PRESIDENT.	OTHER MEMBERS OF EXECUTIVE COMMITTEE.
Professor REDWOOD, London.	M. CARTEIGHE, F.C.S., London.
VICE-PRESIDENTS.	F. CODD, Devonport.
A. P. BALKWILL, Plymouth.	C. EGIN, F.C.S., Bath.
T. H. HILLS, F.C.S., London.	D. FRAZER, Glasgow.
R. REYNOLDS, F.C.S., Leeds.	A. KINNINMONT, Glasgow.
J. WILLIAMS, F.C.S., London.	B. S. PROCTOR, Newcastle-on-Tyne.
TREASURER.	E. SMITH, F.C.S., Torquay.
G. F. SCHACHT, F.C.S., Clifton.	W. A. TILDEN, D.Sc., F.C.S., Clifton.
GENERAL SECRETARIES.	C. UMBRY, F.C.S., London.
Professor ATTFIELD, F.C.S., London.	
F. BADEN BENDER, F.C.S., Manchester.	
LOCAL SECRETARY.	AUDITORS.
ROBERT J. CLARK, Plymouth.	T. DAVISON, Glasgow.
	J. B. TURNEY, Plymouth.

At an adjourned meeting of the Executive Committee, held at Glasgow on the 6th inst., the following grants in aid of research were made from the funds of the Conference:—5*l.* extended, if necessary, to 10*l.*, to Mr. J. C. Thresh, F.C.S., for the purchase of materials in connection with an extended research on the active principle of capsicum fruit; 10*l.* to Dr. Armstrong, F.R.S., for the purchase of strychnine, &c., with which to conduct a research on the oxidation products and bromo-derivatives of that alkaloid; 20*l.* to Dr. Tilden, F.C.S., for the purchase of essential oils; 50*l.* to Dr. C. R. A. Wright, F.C.S., Mr. J. Williams, F.C.S., and Mr. T. B. Groves, F.C.S., to defray expenses in connection with extended researches on the acetonitines.

The following were the members present:—

W. Ainslie (Edinburgh), A. H. Allen (Sheffield), F. Andrews (London), J. H. Atherton (Nottingham), W. R. Atkins (Salisbury), J. Attfield (London), R. Ayres (Bridgwater), J. Babbie (Dumbarton), H. B. Baidon (Edinburgh), H. C. Baidon (Edinburgh), F. Bell (Bradford), J. Baly (Warwick), T. Barclay (Birmingham), W. Barrow (Cheltenham), F. B. Benger (Manchester), T. F. Best (London), J. Booth (Rochdale), J. Borland (Kilmarnock), G. Blanshard (Edinburgh), J. Bourdas (London), F. Braby (Sydenham, S.E.), H. B. Brady (Newcastle-on-Tyne), E. Bremridge (London), R. Brodie (Glasgow), D. Brown (Edinburgh), E. Brown (Leeds), H. Brown (London), W. S. Brown (Manchester), R. C. Buck (Liverpool), F. Bullock (Anerley, S.E.), G. Burrell (Montrose), T. Cassels (Lanark), J. Chalmers (Partick), R. Chipperfield (Southampton), W. I. Clark (Edinburgh), J. A. Clarke (Glasgow), T. N. Clarke (Richmond, Surrey), E. L. Cleaver (Kensington), J. J. Cockburn (Glasgow), F. Coles (London), J. Carrie (Glasgow), T. J. Cutting (Selby), W. H. Darling (Manchester), T. Davison (Glasgow), D. B. Dott (Edinburgh), W. Duncanson (Stirling), W. Dunlop, H. Dunn (Shipley, York), C. Ekin (Bath), J. M. Fairlie (Glasgow), G. Farie (Bridge of Allan, N.B.), J. Fenwick (Glasgow), J. Fingland (Thornhill), T. Fisher (Greenock), J. Foster (Glasgow), D. Frazer (Glasgow), S. M. Frazer (Glasgow), J. Freeland (Bathgate), T. Garside (Southport), A. W. Gerrard (London), T. G. Gibbons (Manchester), W. Gilmour (Edinburgh), A. Gorrie (Kirkcaldy), W. Glass (London), G. T. Glover (Belfast), T. Greenish (London), W. Greig (Glasgow), T. B. Groves (Weymouth), H. W. Hake (London), J. Holloway (Carlisle), G. Harris (Helsburgh), J. L. Hatrick (Glasgow), W. F. Haydon (Birmingham), F. Hodges (Belfast), J. F. Hodges (Belfast), W. L. Howie (Edinburgh), A. Hunt (London), J. C. Hunter (Glasgow), J. Jaap (Glasgow), G. Jarman (Huddersfield), T. S. Johnson (Manchester), F. Jones (Manchester), S. W. Jones (Leamington), D. Kemp (Portobello), C. Kerr (Dundee), C. S. Kingzett (Kensington), A. Kinninmont (Glasgow), W.

Kirkbridge (Penrith), W. Laird (Dundee), W. H. Laird (Edinburgh), A. B. Lewiston (London), H. Long (London), A. Lunan (Banbury), A. F. Macchattie (Glasgow), A. Macintosh (Rothsay), G. D. Mackay (Edinburgh), J. Mackay (Edinburgh), J. Mackenzie (Edinburgh), Wm. Martindale (London), A. H. Mason (Liverpool), W. Matthews (London), J. McDonald (Edinburgh), J. McDuff (Paisley), A. Y. McFarlane (Edinburgh), A. Melunes (Ardrossan), J. McMillan (Glasgow), A. McNaught (Greenock), R. McAdam (Glasgow), H. Meadows (Gloucester), J. Meadows (Leicester), T. S. Miller (Broughton Ferry), A. Napier (Edinburgh), J. Nesbit (Portobello), J. Nicol (Partick), A. Noble (Edinburgh), G. Noyce (Richmond), F. A. Noyce (Nitinuge, South Africa), F. Passmore (London), M. M. P. Muir (Manchester), A. Paul (Glasgow), B. H. Paul (London), A. Preston (London), B. S. Proctor (Newcastle), J. Rait (Partick), R. A. Rait (Partick), J. Redfern (Penrith), T. Redwood (London), F. M. Rimmington (Bradford), R. Reynolds (Leeds), G. W. Rhodes (Huddersfield), J. Robbins (London), R. A. Robinson (London), A. Rose (Glasgow), J. Russell (Dundee), W. D. Savage (Brighton), G. F. Schacht (Clifton), W. Schacht (London), A. Seath (Dumfermline), J. Shaw (Liverpool), G. C. Sedgwick (Sunderland), J. Simpson (Edinburgh), G. Sinclair (Glasgow), J. Slade (Tenbury), R. Smith (Cheltenham), A. Smithells (Barrhead), E. C. C. Stanford (Glasgow), F. Stephenson (Edinburgh), W. W. Stoddart (Bristol), E. H. Storey (London), D. Storrar (Kirkcaldy), A. Strachan (Aberdeen), F. Sutton (Norwich), T. Synington (Edinburgh), E. M. Taubman (Ramsey), R. Taubman (London), A. M. M. Taylor (Bombay), E. Taylor (Droitwich), J. Temple (Port Glasgow), A. Thompson (Carlisle), W. Thomson (Manchester), W. Thorp (London), J. C. Thresh (Buxton), W. A. Tilden (Clifton, Bristol), A. C. Trotman (London), R. Twaddle (Glasgow), W. Wallace (Glasgow), F. D. Watson (London), W. Whyte (Glasgow), J. Williams (London), A. C. Wootton (London), C. R. A. Wright (London), J. R. Young (Edinburgh).

THE SUPPER.

The Glasgow Committee had thoughtfully arranged a general supper for the evening of Tuesday (September 5), the charge of admission to which had been fixed at a very moderate sum, in the belief that a large number of the assistants engaged in pharmacy in the city would like to take part in that reunion. Most of the strangers were present, and a very large number of Glasgow chemists and assistants attended. The large hall of the Royal Hotel was quite full, and some of the Conference dignitaries, insufficiently acquainted with Scottish punctuality, received a salutary lesson on the habit by finding that in Glasgow half-an-hour late meant supper half way through. The laggards were, however, plentifully supplied with jellies and biscuits by the charity of their more comfortable carnivorous predecessors.

Supper over, Mr. FRAZER, from the chair, announced that it was not intended to go through a formal programme of toasts, as at public festivals usually. The Royal Family, the Army and Navy, and such like institutions, were so thoroughly established, and the loyalty of his hearers was so assured, that they might pass over those toasts. Without, therefore, directly proposing toasts, he should call on some few of the gentlemen who had honoured Glasgow with their presence for a few remarks. This was the largest meeting of the Conference which had been held, and, not only in its numbers, but also in the weighty character of the members present, Glasgow had reason to be proud. Many eminent pharmacutists had come from long distances: several of the preceding presidents were there, but, without any disparagement to them, they might be very proud to have so very distinguished a man as Professor Redwood for President of the Conference on this occasion. Certainly the dignity of that position would lose none of its lustre in his hands. Dr. Redwood had himself been a chemist's assistant in Cardiff, and he was now the honoured President of the Pharmaceutical Conference. He was also eminent as an author, as the editor of the Pharmacopœia and of "Gray's Supplement," as a professor in Bloomsbury Square, and as public analyst to two of the most important parishes in London. He was an example to the young men present. All could not be Dr. Redwoods, it was true. There were many hills in Scotland, and, though only one could be the highest, each had its special characteristic. He would ask Professor Redwood, the President of the Conference, and the ex-presidents, Messrs. Stoddart and Groves, to give them a few remarks. Mr. Frazer referred to the ex-presidents as being both distinguished as public analysts as well as the President, but Mr. Groves repudiated the impeachment.

Professor Redwood said he came to Scotland with anticipations of finding pharmacy, in that great emporium of commerce occupying a very high position. But as he passed through the streets those anticipations were to a great extent destroyed. Continually he had seen the words Apothecaries' Hall, Surgeon Hall, and such like, written over what should be chemists' shops. It seemed as if nearly all the pharmacy of Glasgow was in the hands of these usurpers. But this meeting, to a great extent restored his gratification. He was pleased to see so large a number of men, and so many young men together, all of whom were engaged in legitimate pharmacy. What was the Pharmaceutical Conference? What did it mean? It meant pharmaceutical progress, pharmaceutical advancement. And how was this to be effected? The Conference had arisen from pharmaceutical union. It was by union that had been accomplished what had been done, but in this part of the country what was required was pharmaceutical divorce. The union here of medicine and pharmacy was an unnatural one. How, then, was the divorce to be effected? Not by violent means: they would be futile. But it was for what he might call Young Scotland to see that they qualified themselves for the position which was their by right, and would surely be theirs actually some day, if they fitted themselves for it.

Mr. GROVES said he had only been 24 hours in Scotland, and could not therefore know much of the condition of pharmacy there, but he, like the president, had been grieved at seeing the large number of medical halls throughout the streets of Glasgow.

Mr. Stoddart was not present.

Mr. FRAZER next proposed the Pharmaceutical Society, and called on Mr. Williams, the president, for a short speech.

Mr. WILLIAMS said he ought to feel nervous, and he did feel nervous, in having to address this company. He had not forgotten what was called the "Glasgow growl" which had come upon the council some time back so suddenly. As he looked upon the good-natured faces before him, however, it was clear that that growl was only intended to keep them up to the work. They wanted information, not grumbling, and if the trade would give the council information the council would do all that could be done—many things were not possible to do for the benefit of the trade.

Mr. FRAZER referred to other members of the council, especially mentioning, among the absent ones, Messrs. Hills, Sandford and Bottle. He asked the vice-president, Mr. Savage, to give a brief speech.

Mr. SAVAGE made a few humorous remarks, which were very heartily received.

Mr. ELIAS BREMRIDGE was also called upon, and expressed his desire to register every one on the roll of the Pharmaceutical Society.

Mr. FRAZER next called on the Secretaries of the Conference.

Professor ATFIELD said it was taking him at some disadvantage to call on him, a Southerner, to speak of education in Scotland. He knew something of their general education, but knew something of their true-heartedness and their hospitality. These would, perhaps, be easier subjects to speak on. Respecting pharmaceutical education generally, he said, some years ago it had been believed that the proper way to test a man's education was to examine him, not caring where he came from nor how he had obtained his education. Now it was beginning to be seen that that system had failed. Examination alone was not sufficient. He wanted to see education married to examination, and he was convinced that pharmacy would never gain its highest position in this country until a curriculum of education was insisted upon, as in other countries.

Mr. BADEN BENDER also responded briefly.

Mr. Reynolds (on the subject of provincial education) was also asked to speak, as well as Mr. Schacht.

Mr. REYNOLDS said if he were a Glasgow man he should be proud of the noble streets, the public buildings, the commercial works, the shipping on the Clyde, and the other indications of the greatness of the city. But above all these he should be proud of the noble university which they had erected on the most prominent site of the neighbourhood. And it would be acknowledged in time that the strongest castle on that hill would not be such a security for the prosperity of Glasgow as that seat of learning.

Mr. SCHACHT also spoke on the subject of education.

After the services of the pharmaceutical press had been acknowledged, a humorous speech from Mr. Mackay brought to a close an entertainment which seemed to be equally appreciated by strangers and residents.

THE EXCURSION.

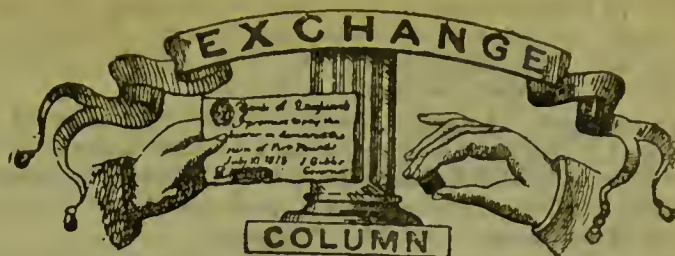
NE of the most tempting items in the Programme of Proceedings was the indication of the arrangements made by Local Committee for the occupation of the day following the local business of the Conference. With every respect for the vital oil of sage, cantharides plaster, and the phosphate of lime, it must be confessed that these and like attractions were themselves seriously rivalled by the Kyles of Bute and the lofty peaks of Arran; and it is to be feared that while Mr. Groves and Dr. Wright were amusing themselves with a private discussion on the aconite alkaloids some of their prior associates were gloating in secret over the anticipated festivities of the Clyde and its famous lochs.

Nothing is more charming than a steamboat excursion on a river in good weather. Nothing can be much more wretched than the deck of a steamboat in the drenching rain, unless it be the cabin. It was risky to arrange such an excursion in the west of Scotland in September; but Mr. Stanford charged himself with the weather department, and the result fully justified the confidence which had been felt in his influence with the powers of the air.

On Thursday of last week, before seven ante meridian (please observe the hour), more than two hundred pharmacists, with their sprinkling of ladies, all trying to look as if this was their customary hour for turning out, were crowding on to the handsome Clyde-built steamer, the *Eagle*, at Glasgow Bridge. At half past four she weighed her anchor. This, we believe is a nautical term signifying that she started. About a score of us were picked up at Dunbarton, Helensburgh, Renfrew, and Greenock, and then the real voyage began. Captain Buchanan, commander of the boat, cordially assisted the designs of our entertainers, and took his steamer up lochs which the usual pleasure-boats but seldom navigate. Throughout the day a constant succession of glorious scenery was presented, and it was enjoyed without fatigue or weariness of any kind. The bracing breeze brought appetite, and this had been foreseen. A substantial breakfast and dinner were provided for us by our generous hosts, the difficult management of the commissariat department being intrusted by Mr. Davison. Two Highland bands were on board, one playing brass music, and the other the famous national instrument, the bag-pipe. Some of the pipers also amused the visitors with illustrations of the sword and other Highland dances. Many new acquaintances were made on that day; some, perhaps, to be long continued, but, if not, leaving behind them a pleasant memory, which alone would be sufficient to ensure our sincere gratitude to those who, at great expense and trouble, provided the opportunity.

On the way home an assembly was brought together in the moon, and some excellent speaking followed. Professor Redwood, in his happiest manner, expressed the thanks of all present for the treat that had been given to the visitors. Mr. Williams also added some remarks of a similar character. Mr. Frazer replied most cordially, and with much humour. Mr. Stanford, from whom the many-headed mob demanded both speech and a song, explained how little he had done, and how much other people had done. For any shortcomings there might have been he apologised, begging the company to remember they were on a steamboat and not on a floating hotel; an injunction which, it must be remarked, was under the circumstances most necessary, as everything had been done to receive visitors into the latter theory. Pressure being applied, Mr. Stanford afterwards related the pathetic story which his wife once told him, and which is one of the most esteemed treasures of the Pharmaceutical Conference. Mr. Kinninmont, of Glasgow, and Mr. Brown, of Manchester, were also ordered to make speeches on no subject in particular, and, as if they had studied Nothing all their lives, they accomplished the difficult task.

Thus, as a wretch remarked as we drew near to the wharf, these pleasant hours Clyde away; and the Glasgow pharmacists may at least assure themselves of this satisfaction, that their efforts were fully appreciated, and the trip most thoroughly enjoyed by those to whom it was given.



TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of THE CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of THE CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

For sale (a bargain) a second-hand sodawater machine, by Barnett. Apply to N. G. Wilcocks, Back Street, Bath.

Handsome lamp, with pillar, in good condition. No reasonable offer refused. 10/251.

Quain's anatomical plates, 342 figures, life size. J. Fryer, Batley Carr, Dewsbury.

For Sale. Fine Newfoundland dog; cheap. George Best, Chemist, Darlington.

A large first-class binocular microscope with English objective, polariscope, &c. Cheap. "Beta," Mr. Tasker, 5 Whittington Place, Upper Holloway, London, N.

Dentist's lathe, steam vulcaniser, tools, specimen show-case and teeth; also books, &c. Cheap. "Beta," Mr. Tasker, 5 Whittington Place, Upper Holloway, London, N.

The Chemist and Druggist, from May, 1874, to January, 1876, except May, June, and August, 1875. Offers wanted. Dispensary, 33 Trongate, Glasgow.

Anatomical atlas, coloured plates, dissected, and placed in position, 1875. Invaluable to prescribing chemists, 5s. 95 Moor, Sheffield.

Stour's constant current battery, good as new, and in perfect working order, cost over 11l. What offers? Palmer & Powell, Chemists, Five Ways, Birmingham.

For offers, 5 gross of shilling assorted perfumes, in dozen boxes. Sample 5s. From Morris, Chemist, Stoke Newington, London, N.

Pharmaceutical Journal (unbound), from July, 1869 to 1876, in one or more lots. What offers? Chilwell, 196 Oxford Street, W.

Show stand, mahogany, fig. 54 Maw's List; good condition; offers wanted; cost 3l. 3s. Hall, Chemist, Brockley Road, S.E.

The *Pharmaceutical Journal* for last 20 years, unbound; will exchange for a microscope or medical book. Stevenson, 165 Edgware Road, W.

To be sold at half price the Nos. of the *Pharmaceutical Journal*, complete from 1870 to 1876. Apply to Mr. Hewish, 33 Hargrave Park Road, Junction Road, Islington, London, N.

Surgeon's desk, with label and paper partitions, 1 quart iron mortar, 2 ½-gallon tincture presses, metal inhaler and gas stove, bandage roller, percolator Y. C. Company. M.D., Mr. Haselar's, Cranbrook, Kent.

Nearly new counter show-case, 3 feet long, 2 feet wide, 2 ½ feet high, glass top, sides, and front, 2 doors at back, 50s.; desk case, 2 feet 8 by 2 feet 3, good order, 25s.; flat counter case, plate 2 feet by 2 feet, 21s. J. Floyd, Bury St. Edmunds.

Muspratt's "Chemistry," well bound, in two vols., 35s.; Burnes' "Ecclesiastical Law," 2 vols., 6s.; Druitt's "Surgeon's Vade Mecum," 4s.; Thompson's "Materia Medica," 7s.; "Publii Ovidii Maronis Metamorphosæ," Interpretations and Notes, old edition, 10s.; nine yearly vols. *The Chemist and Druggist*, bound in blue cloth, 40s.; fox key and fine claws in ebony handle and gum lancet, 5s.; drugs or patent taken in exchange. 7/248.

Nest of 74 mahogany painted gold-labelled drawers, with cupboards underneath, shelving, upright case 4 feet long, 2½ feet high with tablet, and four 1-gallon carboys. Walker, Chemist, Goldenhill, Stoke-on-Trent.

For Preliminary, "Athon's Cæsar;" Bohn's "Translation of Cæsar;" Bryce's "Latin Grammar;" "First Latin Book;" "Pharmaceutical Latin Grammar;" "English Composition;" "Key to Composition;" good condition. 15s. the lot, or separately. Gosney, Crewkerne.

Butcher's 5l. 5s. homœopathic show case, nearly new, containing 128 1s. bottles of pilules, tinctures and liniments, 49 9d. globules, one dozen 6d. arnica plaster, all of which are in good condition, also two 3/4 Ruddock's 1s. "Stepping Stone" (new), and a few patent medicines in constant demand. Offers to H. Cresswell, 57 Loughborough Road, Brixton.

A tin still and worm tub complete, cost 23s., in fair order; *Pharmaceutical Journal*, July 5 to December 6, 1873, October 18 short; January 2, 1875, to July 15, 1876, November 27 short; *The Chemist and Druggist*, May, 1875, to April, 1876. What offers? Steward, Birkhead's Road, Reigate.

22 odd Nos. *Chemist and Druggist*, from 1860 to 1864; 10 ditto, 1871 and 1872; 3 vols complete, 1873, 1874, and 1875; *Pharmaceutical Journal*, 7 odd Nos., 1871 and 1872; 3 vols., 1873, 1874, and 1875, complete, less 2 or 3 Nos. each vol. Offers wanted. J. T. Williams, Chemist, Coleford, Gloucestershire.

For Sale. Immediately, 2 chemist's globes, 1 specie jar, 3 nests of drawers and fittings, ointment and extract jars, tincture and powder baths, 3 counter show-cases, prescription desk, tincture press, scales, &c., very complete, for small chemist's shop, at moderate cost. Apply to George Baxter, Chemist, 13 Foregate Street, Chester.

Rare bargains for cash.—12 various size gas bags of the highest quality, sundry retorts, purifiers, jets, &c., for lime lights, suitable for lantern or theatre work; 500 coloured slides, 3 large size dissolving lanterns, sundry fittings, &c.; particulars of anything on receipt of stamped envelope; cheap lot of oleographs and scraps for framing, screens and scrap books, approval. Wilkinson, Holmeside, Sunderland.

A plate-glass counter case, 6 ft. long, as Maw's 99, 7l. 10s.; a 5-ft. ditto, as Maw's 105, 6l. 10s.; a 6 ft. as Maw's 105, 7l. 10s.; a 4-ft. 10, as Maw's 16, 4l. 4s.; a 3-ft. 6, as Maw's 16, 3l. 10s.; also several other larger and smaller for counters, very cheap; a desk with upright case in front, Maw's 21, 65s.; 2 plate-glass stands, as Treble's fig. 27, 3l.; outside pillar lamp; a 4-ft. dispensing screen, as Maw's 40; a 6-ft. 6 dispensing screen, very elaborate, 8l. 10s.; show stand, as Maw's 55, 75s.; sponge case, as Maw's 92, 5l.; an upright case for front of counter, 4 ft. 6 long, marble top, 5l.; sodawater stand; counter cases, as Maw's 100, 101, &c.; spice jars; carboys; drawers; small glass stands; glass shelves; silvered glass jars; glass jars, gold covers, elaborately labelled, 1s. 6d. each; 2 ft. 9 flat plate-glass case, 3 trays, 3l. 10s.; 2 flat ditto, to open at top, 25s. each; 3 dozen jujube jars, cut knobs, labelled, 2s. 9d. each; two 10-gallon carboys, pear shape, 25s. Natali, 213 Old Street, City Road, E.R.

Superior mahogany shop fixtures, similar to Maw's fig. 190, 10 ft. long, with gold labelled shop drawers, and lockers under, and mahogany cornice on top, 9 ft. high, one 6 ft. long, one 8 ft. long, one 10 ft. long, one 12 ft. long, mahogany shop fixtures, as fig. 194, 195, 196, 197 Maw's, with gold labelled shop drawers, and lockers under, and mahogany cornice on top, 9 ft. high, one 4 ft. long, one 7 ft. long, one 8 ft. 9 long; handsome mahogany side counter cupboards with mahogany wall case on top, and silvered plate-glass pilasters, with cornice on top, 9 ft. high, similar to Maw's fig. 198, 200, 201; 8 mahogany wall cases with and without cupboards, and in all sizes; two 6 ft. long, one 4 ft. long nests of strong deal dovetailed drawers, with till, label drawers, &c., for back of counter, as 72 Treble's; handsome mahogany dispensing counter with plate-glass case on top, 7 ft. long, as Maw's 170; one mahogany plate-glass toothbrush case, as Maw's 72; serpentine front counter show case, 16½ long, 12 in. wide, 8 in. high, with tablet, 13 in. high, as Treble's No. 16.—Lloyd Rayner, 333 Kingsland Road, London, N.

850 gold-labelled shop bottles, all sizes; 8 dozen blue and lilac gold-labelled shop jars, various sizes; 6 dozen 12 oz. 2 lb. handsome domeshaped white porcelain gold-labelled shop jars; 3 dozen handsome gold-labelled show jars, as fig. 1 Maw's; 2 dozen lozenge jars, as fig. 2 Maw's; ½ dozen handsome glass show jars, as fig. C Maw's; several tincture presses, as fig. 1 and 2 Maw's; 6 dozen glass show jars, as fig. A Maw's; counter and dispensing scales, as fig. 1, 4, 6, 7 Maw's; 4 pill machines; 15 handsome gold-labelled specie jars; handsome shop lamp and bracket, as fig. 5 Maw's; two handsome show stands, as fig. 55 Maw's; label chest, as fig. 26 Maw's; upright show case and desk, as fig. 39 Maw's; one 4 ft. 6 long, 2 ft. high, nearly new, plate glass mahogany dispensing screen, as fig. 155 Maw's; one 2-gal., three 3-gal., two 4-gal., four 6-gal., six 8-gal. pear shape carboys; two 80-gallon circular oil cisterns; two mahogany shop chairs: Treble's revolving office chair; one 3 ft. long, 7 ft. 10 high, superior Spanish mahogany book case, with cupboard under; several mahogany top counters, window enclosures, show cases, &c. Lloyd Rayner, 333 Kingsland Road, London.

WANTED.

Some good English beeswax; state price. 2/249.
Gilded wood letters for shop front, 4 inch. Corke, Ticehurst.
Shelving, counter, bottles, jars, &c. Must be cheap. Condition no object if can be made serviceable. 15/250.
Duu's "Veterinary Medicine," late edition, cheap. Send price to Goodman, Abingdon Buildings, Bath.
Pharmaceutical Journal, May 1, 1875. State price. Heald, Sleaford.
A chemist's street lamp; state price, condition, and description. Vennall, Chemist, Cranleigh, Guildford.
Cistern to hold 80 or 100 gallons, for benzoline. March, Long Buckby, Rugby.
Large gilt tooth. Size and price. Banks, 59 Middle Hillgate, Stockport.
Pharmaceutical Journal, 1871 to 1873, unbound. Bell, Cheshire & Co., Druggists, Brixton, S.W.
Dental chair. Send description and price to A. Smith Crediton.
Show-jars for window, large size and in good condition. 14/248.
A small but complete set of tooth extracting instruments; also strong dental chair, with head rest, &c. Description and lowest price to W. Gare, Bampton, Devon.
Sheep ointment machine, to work either by steam power or hand; a sketch and price is required. Apply, Sturton & Sons, Peterboro.
A strong second-hand wall-case about 8 feet long, and a counter with drawers or lockers about 5 feet long by 20 inches deep; also a transparency with pharmaceutical or other arms. Stevenson, 165 Edgware Road, W.

ADDRESSES AND INFORMATION WANTED.

Chemists able to give any information in reply to queries printed below are respectfully requested to communicate the same, addressing in the first instance to the reference figure given, "Care of the Publisher of THE CHEMIST AND DRUGGIST." Charge for insertions, 1d. per word.

Albert Denn, supposed assisting surgeon. 4/231.
Colonel Wood—wounded in the knee at Delhi. 5/222.
Mr. James Hunt, formerly of Clerkenwell. An old friend would like to hear from him. 24/232.
Wanted, the address of Mr. Margetts—tall, sandy whiskers. 22/233.
The Rev. Samuel Richard Diugley, Vernon Spicer Simmonds. 4/230.
William Dickinson (Colliery Secretary), late of Leeswood, Meld. 15/243.
J. T. Stillwell—professed to be an agent to the Whittington Life Assurance Company; tall, slight, black whiskers. 14/230.

Mr. David Forbes, asked for in this column, has been found at Arcachon, France. Our correspondent from Paris says that his landlord will be most happy to receive any money due to him.



[The following list has been compiled expressly for THE CHEMIST AND DRUGGIST by L. de Fontainomoreau & Co., Patent Agents, 4 South Street, Finsbury, London; 10 Rue de la Fidélité, Paris; and 33 Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

2307. A. Weightman, of Nottingham. Improvements in apparatus to be applied to bottles and other vessels to secure the corks or stoppers therein. Dated June 1, 1876.
2417. S. Walker, of Shipley, Yorkshire. Improvements in stoppering bottles or other similar articles. Dated June 12, 1876.
2563. J. Swindells, of Warrington, Lancashire, and R. Lancaster, of Widnes, Lancashire. Improvements in the manufacture of certain chemical products from air and water. Dated June 21, 1876.
2690. J. Duncan and J. A. K. Newlands, of Mincing Lane, London, and B. E. K. Newlands, of Clyde Wharf, Essex. Improvements in the manufacture of sulphate of alumina. Dated June 30, 1876.
2714. T. Rule, of Gilesgate, Durham. Improvements in apparatus for stoppering bottles for containing gaseous and aerated liquids. Dated July 1, 1876.
2737. J. Calderwood, of Midlothian, North Britain. Improvements in utilising sulphuric acid tar. Dated July 4, 1876.
2773. L. Rose, of Curtain Road, Finsbury, London. Improvements in bottles and stoppers for aerated or effervescing beverages and liquids. Dated July 7, 1876.
2793. E. H. C. Monckton, of Fineshade, Northamptonshire. Improvements in the preparation of medicines, and in the apparatus for effecting the same. Dated July 8, 1876.
2805. J. Mackay, of Glasgow, North Britain. Improvements in furnaces to be used in the manufacture of chromates. Dated July 10, 1876.
2899. J. M. Plessner, of Golden Square, London. Improvements in apparatus to facilitate the withdrawal of non-aerated liquids from decanters and other like bottles without tilting or handling such bottles. Dated July 14, 1876.

Letters Patent have been issued for the following:—

278. P. Spence, of Manchester. Improvements in the production of sulphate of potash for the manufacture of alum. Dated January 24, 1876.
363. W. A. Smith, of Glasgow, North Britain. Improvements in obtaining, preserving, and packing sodium and potassium, and in apparatus therefor, and in part applicable in obtaining zinc. Dated January 29, 1876.
405. H. Baggeley, of Fulham, Middlesex. An improved compound chiefly designed for the manufacture of crucibles, retorts, and other vessels and apparatus to be employed for chemical purposes. Dated February 1, 1876.
473. P. Barrie & W. Samson, Dundee, North Britain. Improvements in internal stoppers for aerated water bottles. Dated February 5, 1876.
748. C. Allen, of Saint Ebbes, Oxford. Improvements in bottle stoppers for aerated liquids. Dated February 23, 1876.
999. E. Solvay, of Brussels, Belgium. Improvements in the manufacture of carbonate of soda, and in the process and apparatus used in such manufacture. Dated March 8, 1876.
1004. J. Williams, of Hanley, Stafford. Improvements in stoppers for bottles for aerated or effervescent liquid. Dated March 8, 1876.
1075. N. W. Lobb, of South Lambeth, Surrey. Improvements in the preparation of farinaceous food and in other alimentary substances. Dated March 11, 1876.
1289. T. Rule, of Gilesgate, Durham. Improvements in the construction of bottles for containing aerated or other liquids. Dated March 25, 1876.
1899. A. L. Dowie, of Edinburgh, N. Britain. Improvements in apparatus connected with smelting of metals and metallic ores, especially the smelting of zinc from the ores and the prevention of loss of zinc during the process. Dated May 5, 1876.
1904. E. Solvay, of Brussels, Belgium. Improvements in the manufacture of carbonates of soda by the ammoniacal process. Dated May 2, 1876.
2002. E. A. Parnell, of Swansea, Glamorgan. Improvements in the manufacture of arsenious acids and metallic arsenic. Dated May 12, 1876.
2193. H. Codd, of Camberwell, Surrey. Improvements in bottles for containing aerated liquid. Dated May 24, 1876.

Specifications published during the month:—

Postage 1d. each extra.

1875.

4104. C. Fannerean. Bottles. 6d.
4200. W. Bull. Evaporating brine and manufacturing chloride of sodium, &c. 4d.
4248. F. J. Cleaver. Soap pomade, &c. 4d.
4369. J. L. Ryland. Jars, bottles, &c. 4d.
4392. M. Prentice. Platinum vessels for chemical operations. 4d.



BANKRUPTS.

- CLARENCE, FELIX ROBERT, 34 New King Street, Bath, chemist. September 2.
- TWIBELL, John Major, Sheffield, dealer in sewing machines, manufacturer of polishing paste and baking powder, and agent. August 15.

LIQUIDATIONS.

- AKHURST, WILLIAM EDWARD, trading as AKHURST & Co., 131 Walworth Road, prev. Silchester Road, Notting Hill, chemist. August 22.
- DAY, ELIJAH & ROBERT DYETT MANNERS, Clifton Grove, Mytton Street, Hulme, Manchester, manufacturing chemists. August 29.
- HILLS, ARTHUR, Hammerwich, Staffordshire, and Wepre, Flint, chemical manufacturer. August 8.
- JACKSON, JOHN W., 12 Ship Street and Old Steyne, Brighton, druggists' sundriesman. August 16.
- JACKSON, WILLIAM, Aprc Street, Castleford, Yorkshire, chemist. September 2.
- MCCARTHY, CHARLES G., High Street, Cardiff, chemist. August 18.
- NICHOLSON, WILLIAM GEORGE, Hulton Street, Moss Side, near Manchester, and JOHN MORRIS, Back Water Street, Manchester, trading as M. Tomlinson, NICHOLSON & MORRIS, at Tomlinson Street, Hulme, Manchester, druggists' sundriesmen. August 24.
- PRICE, THOMAS HENRY, 224 Oxford Street, Stepney, cork manufacturer. August 11.
- RICHARDSON, CHARLES FREDERICK, and FREDERICK PLATTS, Leeds, black beer and cordial manufacturers. August 14.
- STOKES, CHARLES, 28 Maddox Street, and Belsize Road, South Hampstead, dentist. August 8.
- TAPP, CHARLES, 1 Clifton Terrace, Doncaster, manufacturing chemist. August 24.
- TURNER, HENRY, trading as HENRY TURNER & Co., 77 Fleet Street, chemist and publisher. August 29.
- YOUNG, TONKIN, St. Ives, chemist, grocer and shipowner. August 15.

DISCHARGE GRANTED.

- MITCHELL, THOMAS C. (Bkt.), Marsh Lane, Leeds, chemist. Discharge granted August 2.

PARTNERSHIPS DISSOLVED.

- CLAPHAM & MENNEL, Heworth Shore, Durham, chemical manufacturers.
- DAVIES & HARDY, Regent Street, chemists.
- FARRINOND & FARRINOND, jun., Lathom, Lancashire, chemical manufacturers.
- SHELDRAKE & MIDGLEY, Keighley, druggists.
- WILLIAMS & BOLTON, Bishopgate Avenue, perfumers.

DIVIDENDS DECLARED.

- FARRER, ROBERT S. (Liq.), Weston Road, Brighton, chemist. 1st and final div. 1s. 1d.; Clark & Boyes at Edmonds, Davis & Clark's, Brighton, and Boyes & Child's, 42 Poultry, London.
- MUSKINSON, JOHN L. (Liq.), Nottingham, chemist. 1st and final div., 4s. 3d.; J. Marsh at J. Black's, solicitor, Nottingham.

Marriage.

SHAW—SHAW.—On August 24, Mr. W. Shaw to Elizabeth, daughter of the late Henry Shaw, Esq., of Castle Northwich, at Hartford Church, by the Rev. R. Marsh, Rector of Castle Northwich.

Obituary.

ARMITAGE.—September 3, Mr. John Armitage, chemist and druggist, of Dukinfield. Aged 37 years.

FORD.—May 24, at his residence, East St. Kilda, Mr. William Ford, chemist and druggist, of Swunston Street, Melbourne. Aged 50 years.

GIBSON.—August 14, Mr. Charles Septimus Gibson, chemist and druggist, of Haydon Bridge, Northumberland. Aged 60 years.

MILTON.—August 7, Mr. Reuben Madge Milton, chemist and druggist, of 246 High Street, Exeter.

HEARD.—September 7, Mr. Henry Clement Heard, of Fore Street, Bridge-water, chemist. Aged 58 years.

WRIGHT.—August 3, Mr. James Wright, pharmaceutical chemist, Chesterfield. Aged 66 years.

Monthly Price Current.

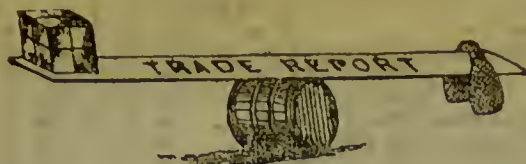
The prices quoted in the following list are those actually obtained in Mincing Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.	1876.		1875.	
	s.	d.	s.	d.
ACIDS—				
Acetic per lb.	0	3½ to	0	0
Citric	2	0 ..	2	10
Hydrochlor.....per cwt.	5	0 ..	4	0
Nitric	0	4½ ..	0	5
Oxalic	0	5 ..	0	5½
Sulphuric	0	0½ ..	0	6
Tartaric crystal..	1	5 ..	1	6½
powdered ..	1	5 ..	1	6½
ANTIMONY ore	280	0 ..	260	0
crude .. per cwt.	42	0 ..	40	0
star.....	59	0 ..	59	0
ARSENIC, lump	27	6 ..	30	0
powder.....	11	0 ..	14	0
BRIMSTONE, rough ..	126	10 ..	10	0
roll .. per cwt.	10	0 ..	10	0
flour.....	13	0 ..	12	0
IODINE, dry	0	6 ..	0	7½
IVORY BLACK, dry ..	8	6 ..	8	6
MAGNESIA, calcined..	1	8 ..	1	6
MERCURY	160	0 ..	240	0
MINIUM, red	0	0 ..	24	0
orange ..	37	0 ..	37	0
PRECIPITATE, red ..	4	1 ..	4	10
white ..	4	0 ..	4	9
PRUSSIAN BLUE ..	0	0 ..	0	0
SALTS—				
Alum	140	0 ..	155	0
powder.....	160	0 ..	170	0
Ammonia:				
Carbonate.....per lb.	0	5 ..	0	7
Hydrochlorate, crude,				
white	560	0 ..	640	0
British (see Sal Am.)				
Sulphate.....per ton	380	0 ..	365	0
Argol, Cape	80	0 ..	88	0
Red.....	70	0 ..	80	0
Oporto, red ..	33	0 ..	34	0
Sicily	0	0 ..	60	0
Ashes (see Potash and Soda)				
Bleaching powd...per cwt.	6	6 ..	8	0
Borax, crude.....	30	0 ..	30	0
British refnd. ..	43	6 ..	53	0
Calomel	3	8 ..	4	4
Copper:				
Sulphate per cwt.	22	0 ..	25	6
Copperas, green..per ton	55	0 ..	65	0
Corrosive Sublimate p. lb.	3	1 ..	3	8
Cr. Tartar, French, p. cwt.	106	0 ..	112	0
brown ..	80	0 ..	92	6
Epsom Salts	5	3 ..	6	6
Glauber Salts	4	6 ..	6	6
Lime:				
Acetate, white, per cwt.	11	0 ..	11	0
Magnesia: Carbonate ..	45	0 ..	42	6
Potash:				
Bichromate per lb.	0	4½ ..	0	6½
Carbonate:				
Potashes, Canada, 1st				
sort	24	0 ..	28	6
Pearlashes, Canada, 1st				
sort	28	6 ..	39	0
Chlorate	0	8½ ..	0	9½
Prussiate	0	10½ ..	1	0½
red	3	2 ..	3	2
Tartrate (see Argol and Cream of Tartar)				
Potassium:				
Chloride.....per cwt.	7	0 ..	7	0
Iodide	7	9 ..	10	0
Quinine:				
Sulphate, British, in				
bottles	8	6 ..	7	0
Sulphate, French ..	8	3 ..	6	6
Sal Acetos	0	7½ ..	0	8½
Sal Ammoniae, Brit. cwt.	44	0 ..	44	0
Saltpetre:				
Bengal, 6 per cent. or				
under	17	3 ..	18	0
Bengal, over 6 per cent.				
per cwt.	17	0 ..	17	0
British, refined ..	21	6 ..	22	0
Soda: Bicarbonate, p. cwt.	10	9 ..	12	9
Carbonate:				
Soda Ash ..per deg.	0	1½ ..	0	2½
Soda Crystals per ton	77	6 ..	97	6
Hyposulphite, per cwt.	0	0 ..	0	0
Nitrate	11	3 ..	11	3
SUGAR OF LEAD, White cwt.	28	0 ..	44	0
SUGAR OF LEAD, Brown, cwt.	27	0 ..	32	0
SULPHUR (see Brimstone)				

	1876.		1875.	
	s.	d.	s.	d.
VERDIGRIS per lb.	1	1 to	1	5
VERMILION, English ..	3	2 ..	3	4
China ..	0	0 ..	0	0
DRUGS.				
ALOE, Hepatic per cwt.	60	0 ..	60	0
Socotrine ..	65	0 ..	80	0
Cape, good..	46	0 ..	34	0
Inferior	38	0 ..	32	0
Barbadoes ..	45	0 ..	60	0
AMBERGUIS, grey.....oz.	58	0 ..	40	0
BALSAM—				
Canada.....per lb.	1	2 ..	1	9
Capivi	1	8 ..	2	10
Peru	4	9 ..	6	0
Tolu.....	0	0 ..	5	0
BARKS—				
Canella alba.....per cwt.	26	0 ..	16	0
Cascarilla	16	0 ..	19	0
Peru, crown & grey per lb.	1	5 ..	0	8
Calisaya, flat ..	2	0 ..	2	0
quill ..	2	6 ..	2	0
Carthagena ..	2	0 ..	0	6
Columbian ..	1	9 ..	6	0
E. I.	2	0 ..	1	0
Pitayo	0	10 ..	0	4
Red	2	0 ..	1	6
Buchu Leaves.....	0	1 ..	0	1½
CAMPHOR, China ..per cwt.	72	6 ..	67	6
Japan ..	75	0 ..	0	0
Refin. Eng. per lb.	0	11½ ..	1	0½
CANTHARIDES.....	2	6 ..	3	0
CHAMOMILE FLOWERS p. cwt.	40	0 ..	35	0
CASTOREUM	7	0 ..	6	0
DRAGON'S BLOOD, l. p. cwt.	110	0 ..	70	0
FRUITS AND SEEDS (see also Seeds and Spices).				
Anise, China Star per cwt.	85	0 ..	110	0
Spanish, &c. ..	26	0 ..	30	0
Beans, Tonquin....per lb.	1	7 ..	1	5
Cardamoms, Malabar				
good	3	5 ..	4	0
inferior....	0	10 ..	1	9
Madras.....	2	0 ..	2	6
Ceylon	4	0 ..	5	8
Cassia Fistula....per cwt.	8	0 ..	12	6
Castor Seeds	5	0 ..	10	0
Cocculus Indiens ..	9	0 ..	14	0
Colocynth, apple ..per lb.	0	6 ..	0	6
Croton Seeds per cwt.	32	0 ..	40	0
Cubebs.....	29	0 ..	25	0
Cumin	15	0 ..	15	0
Dividivi	10	0 ..	12	0
Fenugreek	15	0 ..	8	0
Guinea Grains ..	21	6 ..	23	0
Juniper Berries ..	8	0 ..	9	0
Nux Vomica... ..	8	6 ..	7	9
Tamarinds, East India,,	13	6 ..	20	0
West India ..	11	0 ..	10	0
Vanilla, large per lb.	20	0 ..	57	0
inferior ..	13	0 ..	38	0
GINGER, Preserved, per lb.	0	5½ ..	0	6
HONEY, Chili per cwt.	0	0 ..	31	0
Jamaica ..	35	0 ..	38	0
Australian ..	0	0 ..	0	0
IPECACUANHA per lb.	4	0 ..	4	2
ISINGLASS, Brazil..	2	6 ..	2	9
Tongue sort ..	2	9 ..	3	0
East India ..	0	10 ..	1	0
West India ..	4	4 ..	4	5
Russ, long staple	9	0 ..	13	0
inferior ..	0	0 ..	0	0
Simovia ..	2	0 ..	3	0
JALAP, good.....	0	7 ..	0	7
infer. & stems ..	0	6 ..	0	5½
LEMON JUICE per degree	0	1 ..	0	2
LIME JUICE.....per gall.	1	3 ..	1	6
LIQUORICE, Spanish per cwt.	0	0 ..	55	0
Liquorice Root ..	12	0 ..	20	0
MANNA, flaky	5	6 ..	4	6
small	1	6 ..	1	6
MUSK, Pod.....per oz.	16	0 ..	13	0
Grain.....	51	0 ..	47	0
OILS (see also separate list)				
Almond, expressed per lb.	1	6 ..	1	1
Castor, 1st pale....	0	4 ..	0	4½
second	0	3½ ..	0	3½
Cod Liver	5	6 ..	3	6
Croton	0	2½ ..	0	2½
Essential Oils:				
Almond	20	0 ..	25	0
Anise-seed	7	0 ..	10	6
Bay	0	0 ..	65	0
Bergamot	10	0 ..	10	9
Cajeput.....per bottle	2	9 ..	2	8
Caraway.....per lb.	9	0 ..	9	0
Cassia	4	2 ..	4	4
Cinnamon	2	6 ..	1	0
Cinnamon-leaf ..	0	2½ ..	0	2
Citronelle	0	1½ ..	0	1½
Clove	8	6 ..	9	6
Juniper	0	0 ..	0	0
Lavender	1	8 ..	2	0
Lemon.....	7	0 ..	7	0
Lemongrass per oz.	0	2½ ..	0	2½

	1876.		1875.	
	s. d.	s. d.	s. d.	s. d.
s sential Oils, continued:—				
Neroli	3 0	6 6	0 4	3 0
Nutmeg	0 7	0 7½	0 7	0 0
Orange.....per lb.	6 0	9 0	6 0	9 0
Otto of Roses.....per oz.	13 0	25 0	13 0	25 0
Patchouli	2 0	3 6	2 0	3 6
Peppermint:				
American per lb.	12 6	14 9	20 6	21 6
English	34 0	35 0	35 0	36 0
Rosemary	2 0	2 6	1 4	1 10
Sassafras	2 3	2 6	2 3	2 6
Spearment	14 0	16 0	12 0	19 0
Thyme.....	0 0	0 0	1 9	2 0
Mace, expressed ..per oz.	0 6	0 10	0 7½	0 10
OPIUM, Turkey.....per lb.	19 6	21 6	29 0	31 0
inferior	9 0	18 0	22 0	35 0
QUASSIA (bitter wood) per ton	100 0	140 0	200 0	310 0
RHUBARB, China, good and fine	3 1	4 5	4 0	4 8
Good, mid. to ord. ..	0 8	2 10	0 9	1 11
Dutch Trimmed.. ..	8 0	8 6	0 0	0 0
ROOTS—Calumba.....per cwt.	25 0	28 0	20 0	24 0
China	19 0	24 0	19 0	24 0
Chiretta	0 3½	0 4	0 4	0 6
Galangal.....	19 0	22 0	19 0	22 0
Gentian	23 0	24 0	23 0	24 0
Hellebore	0 0	0 0	30 0	33 0
Orris	26 0	75 0	26 0	75 0
Pellitory	60 0	64 0	38 0	39 0
Pink	0 0	0 0	0 10	1 3
Rhatany.....	0 4	0 8	0 4½	2 0
Seneka.....	3 3	3 5	3 5	3 6
Snake	0 6	0 6½	0 10	1 0
SAFFRON, Spanish ..	35 0	36 0	20 0	23 0
SALEP, Alicant.... per cwt.	0 0	0 0	0 0	0 0
SARSAPARILLA, Lima per lb.	0 6	0 8	0 0	0 0
Guayaquil	1 9	1 11	0 0	0 0
Honduras	1 3	1 6	1 3	2 0
Jamaica	2 8	3 0	2 4	2 10
SASSAFRAS	0 0	0 0	0 0	0 0
SCAMMONY, Virgin ..per lb.	24 0	30 0	25 0	36 0
second & ordinary ..	6 0	22 0	7 0	24 0
SENNA, Bombay	0 1	0 4	0 1	0 4
Tinnivelly	0 2	0 3	0 1½	0 10
Alexandria	0 4½	2 6	0 7	2 6
SPERMACETI, refined ..	1 4	0 0	1 4	0 0
American	1 0	0 0	1 1	0 0
SQUILLS.....	0 2	0 3	0 3	0 5
GUMS.				
AMMONIACI drop .. per cwt.	1 15	2 15	2 15	5 10
lump.. ..	1 0	1 12	1 6	2 0
ANIMI, fine washed ..	11 0	12 10	11 0	12 0
bold scraped ..	9 10	10 17/6	10 0	10 17/6
sorts	6 10	9 5	5 10	9 17/6
dark	4 0	6 0	4 10	5 10
ARABIC, E.I., fine				
pale picked ..	2 19	4 0	3 0	3 16
srts.,md.to fin. ..	2 10	2 18	1 13	2 19
garblings ..	1 1	2 4	0 19	1 15
TURKEY, pick. gd. to fin. ..	6 0	10 0	7 0	10 0
second & inf. ..	2 10	5 10	3 0	6 13
in sorts ..	1 15	2 5	1 10	2 15
Gedda	1 3	1 11	1 1	1 4
BARBARY, white ..	2 4	2 16	1 10	1 15
brown ..	1 10	1 14	1 5	1 10
AUSTRALIAN.....	1 15	2 5	1 14	2 4
ASA FETIDA, cm. to fin ..	0 15	1 10	0 12	1 18
BENJAMIN, 1st & 2nd	10 0	36 10	20 0	28 0
Sumatra 1st & 2nd	6 12/6	15 5	7 10	12 10
3rd ..	3 9	5 5	3 10	4 10
COPAL, Angola red ..	6 0	6 15	5 10	6 10
Benguela ..	4 0	5 0	4 0	5 0
Sierra Leone, per lb.	0 7½	0 11	0 8	1 1
Manilla.....per cwt.	15 0	27 0	20 0	34 0
DAMMAR, pale	60 0	63 0	58 0	62 0
Singapore	60 0	63 0	50 0	61 0
EUPHORBUM	12 0	20 0	12 0	20 0
GALBANUM	0 6	1 6	1 0	1 6
GAMBOGE, pkcd. pipe per cwt.	205 0	260 0	185 0	240 0
GUAIACUM	1 0	3 2	0 6	2 0
KINO.....per cwt.	40 0	50 0	50 0	90 0
KOWRIE, rough ..	30 0	48 0	40 0	50 0
scraped sorts ..	51 0	59 0	51 0	70 0
MASTIC, picked per lb.	4 0	5 0	4 0	5 0
MYRRH, gd. & fine per cwt.	160 0	170 0	170 0	200 0
ord. to fair....	100 0	155 0	61 0	170 0
OLIBANUM, p. drop ..	50 0	54 0	57 0	63 0
amber & ylw. ..	36 0	50 0	53 0	56 0
garblings.....	15 0	26 0	23 6	32 0
SENEGAL	2 10	3 0	2 0	2 5
SANDARAC	82 6	95 0	85 0	100 0
SHELLAC, Orange.. ..	90 0	135 0	185 0	265 0
Liver ..	85 0	105 0	165 0	200 0
THUS	20 0	21 6	20 0	22 0
TRAGACANTH, leaf ..	240 0	400 0	180 0	360 0
in sorts ..	25 0	175 0	30 0	195 0
OILS.				
SEAL, pale	32 10	33 0	33 0	0 0
yellow to tinged ..	30 0	32 0	31 0	32 10
brown	29 10	0 0	29 0	30 0
SPERM.....	84 0	0 0	98 0	0 0
BODY	0 0	0 0	0 0	0 0
COD	43 0	0 0	42 0	0 0

	1876.		1875.	
	£ s.	£ s.	£ s.	£ s.
Oils, continued:—				
WHALE, South Sea, pale, per tun	34 10	35 0	34 10	35 0
yellow ..	32 0	34 0	32 0	34 0
brown ..	28 0	30 0	29 0	30 0
East India, Fish ..	26 0	0 0	24 0	24 10
OLIVE, Galipoli....per ton	46 10	0 0	0 0	0 0
Gioja.....	44 10	0 0	42 0	42 5
Levant	0 0	0 0	38 0	41 5
Mogador	0 0	0 0	37 10	38 0
Spanish	0 0	0 0	0 0	0 0
Sicily	0 0	0 0	0 0	0 0
COCOANUT, Cochln.. ..	39 0	40 0	0 0	0 0
Ceylon ..	37 0	0 0	37 10	37 15
Sydney ..	30 0	36 10	30 0	36 0
GROUND NUT AND GINGELLY:				
Bombay	0 0	0 0	0 0	0 0
Madras	36 10	0 0	34 0	0 0
PALM, fine.....	36 0	36 10	34 10	0 0
LINSEED.....	24 1/0	24 10	24 0	25 10
RAPESEED, English, pale ..	39 0	0 0	32 10	0 0
brown	37 0	37 5	30 10	0 0
Foreign, pale ..	39 10	40 0	33 0	0 0
brown	0 0	0 0	0 0	0 0
COTTONSEED	29 0	29 10	26 12/6	27 0
LARD	57 0	0 0	61 0	0 0
TALLOW	28 0	54 0	23 10	45 0
TURPENTINE, American, cks.	23 6	0 0	22 0	0 0
French ..	0 0	0 0	0 0	0 0
PETROLEUM, Crude	0 0	0 0	0 0	0 0
refined, per gall.	1 7½	0 0	0 9½	0 0
Spirit ..	1 2	0 0	0 9½	0 9½
SEEDS.				
CANARY.....per qr.	50 0	75 0	160 0	200 0
CARAWAY, English per cwt.	0 0	0 0	44 0	0 0
German, &c....	0 0	0 0	0 0	0 0
CORIANDER	15 0	23 0	10 0	18 0
HEMP.....per qr.	40 0	45 0	36 0	38 0
LINSEED, English per qr. ..	60 0	66 0	60 0	64 0
Black Sea & Azof ..	48 0	0 0	52 0	0 0
Calcutta ..	49 0	0 0	50 0	52 0
Bombay ..	49 0	50 0	52 0	0 0
St. Petersburg ..	0 0	0 0	0 0	0 0
Mustard, brown..per bshl.	12 0	15 0	0 0	0 0
white.. ..	13 0	16 0	10 0	12 0
POPPY, East India, per qr.	45 0	0 0	47 6	49 0
SPICES.				
CASSIA LIGNEA ..per cwt.	46 0	65 0	54 0	75 0
Vera	22 0	44 0	24 0	48 0
Buds	75 0	78 0	107 6	110 6
CINNAMON, Ceylon:				
1st quality	2 1	4 2	2 6	4 2
2nd do.	1 8	3 0	2 1	3 4
3rd do.	1 6	2 8	1 7	2 10
Tellicherry	2 9	3 0	3 0	3 5
CLOVES, Penang	1 1½	2 0	1 8	1 9
Amboyna	1 5	1 6	1 5	1 6
Zanzibar	1 1½	1 2½	1 4	1 6
GINGER, Jam., fine per cwt.	93 0	202 6	80 0	160 0
Ord. to good	54 0	92 0	52 0	80 0
African	30 0	0 0	46 0	47 0
Bengal	29 0	30 0	40 0	42 0
Malabar	30 0	0 0	35 0	40 0
Cochin	48 0	144 0	57 0	120 0
PEPPER, Blk, Malabar, per lb.	0 4½	0 5½	0 5½	0 6½
Singapore	0 3½	0 0	0 5½	0 0
White Tellicherry ..	0 10	1 4	0 11	1 5
Cayenne	2 4	2 10	3 0	3 7
MACE, 1st quality ..	1 11	2 5	2 5	2 11
2nd and inferior ..	0 11	1 10	1 6	2 4
NUTMEGS, 78 to 60 to lb.	3 4	4 3	3 8	4 4
90 to 80 ..	3 0	3 3	3 1	3 4
132 to 95 ..	2 4	2 11	2 6	3 0
PIMENTA	0 3½	0 0	0 2½	0 3
VARIOUS PRODUCTS.				
COCHINEAL—				
Honduras, black ..per lb.	1 10	2 5	1 10	2 6
silver ..	1 10	2 0	1 8	1 11
pasty ..	1 9	0 0	1 7	0 0
Mexican, black....	1 9	1 10	1 9	1 11
silver.....	1 8	1 9	1 7	1 8
Teneriffe, black ..	1 10	2 9	1 9	3 2
silver ..	1 9	1 11	1 9	1 11
SOAP, Castile.....per cwt.	26 0	33 0	33 0	34 0
SOY, China	1 6	1 8	2 2	2 3
SPONGE, Turk. fin. pkd pr lb.	0 0	0 0	12 0	16 0
Fair to good ..	0 0	0 0	4 0	11 0
Ordinary ..	0 0	0 0	1 0	3 0
Bahama.....	0 0	0 0	0 6	3 0
TERRA JAPONICA—				
Gambier	19 0	0 0	27 6	27 9
Free cubes	26 6	29 0	39 0	42 0
Cutch	23 3	24 0	25 6	27 0
WOOD, DYE, Bar ..per ton	£3 7/6	£3 10	£4 10	5 0
Brazil	0 0	0 0	9 0	27 0
Cam.....	18 0	29 10	20 0	36 0
Fustic, Cuba	8 10	9 0	9 10	9 15
Jamaica	5 5	5 15	8 0	8 10
LOGWOOD, Campeachy..	9 0	10 0	9 0	10 0
Honduras	7 0	7 15	7 10	8 0
St. Domingo	5 10	6 10	6 5	6 15
Jamaica	5 5	5 15	6 15	7 0
LIMA, first pile ..	9 0	10 0	11 0	13 0
RED SANDERS	6 0	0 0	6 15	7 0



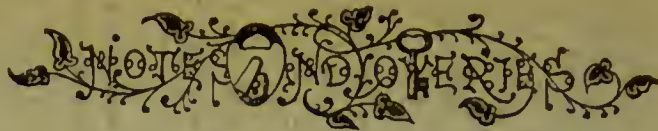
ALTHOUGH the Board of Trade returns still indicate a falling off in export trade as compared with the corresponding periods of the past few years, there is one feature in the latest statistics which is decidedly hopeful. The declared value of the August exports of this year was 17,962,884*l.*, being less by 1,445,992*l.* than the exports during August, 1875. But what is noteworthy is that while in August, 1875, the value of the exports was about a million less than in July of the same year, this year August has gone beyond its predecessor to the amount of nearly two millions. This fact gives some ground for hope that we may have touched the bottom, after a long period of depression.

Some sections of the chemical trade show a decided improvement. Alkali, after drooping up to the end of August, rallied with the commencement of this month, and now closes firmly at a recovery of its late decline. Oxalic acid cannot now be bought under 5*d.* The extraordinarily low price of bleaching powder tempted business, and it is now firm at 6*l.* 10*s.* Good business, too, is reported in ammonia, sulphate of copper, chlorate of potash, and refined borax, though no alteration of price has yet been effected. Citric acid is firmer at 2*s.* 10*d.*, and has been sold at 2*s.* 10½*d.*; tartaric touches 1*s.* 5*d.*

Last week's London drug sales showed rather more animation than has marked the transactions recently, several of the chief staples bringing advanced rates. Camphor was in notable request, and both publicly and privately large stocks have been taken off the market at prices ranging from 70*s.* to 75*s.* Aloes, ipecacuanha and musk also realised an advance. Cantharides and calumba root, on the contrary, showed a decline. Some jaborandi leaves were bought in at 6*d.*, and coca at 4*s.* 6*d.* Quinine yielding barks are scarce in supply, and bring higher prices. Quinine itself has advanced nearly 1*s.* per ounce during the month. Some Japanese oil of peppermint of crystalline appearance was put up, 18*s.* being named, but it did not find a purchaser. H. G. Hotchkiss's brought 15*s.* 3*d.* English oil has advanced. Brazilian isinglass has brought rather higher prices generally. Cochineal is a little dearer. The American Consul at the Canary Islands reports that the extreme hot weather has twice destroyed the spawn, and that only a small crop is anticipated. English camomiles have not yet been brought on to the market, but foreign flowers fetch advanced prices. The crop is said to be very deficient. Cubebs are scarce and dearer, but copaiba is in abundant supply and cheaper.

Holders of shellac have had to give way slightly, some 600 chests at recent auctions going for about 5*s.* per cwt. less than last month's prices. Reliable advices from Calcutta indicate that some of the chief factories have been lately closed for a time, and this fact is likely to give a firmer tone to the market. China nut galls have been sold at the advanced price of 56*s.* 6*d.* Cutch and gambier have steadily risen, the former closing at 25*s.*, the latter at 19*s.* 3*d.*

Oils are generally steady. Rape has advanced 2*l.* per ton, and olive is much firmer. The reports of a deficient crop seem to be gaining credence, and a considerable advance may occur. American turpentine is more strongly held after a slight depression. Petroleum has presented quite an excited market. The combination of producers seems to have succeeded, and the price of refined has been forced up to 1*s.* 7½*d.* latest quotation, with sales for October–December at 1*s.* 6*d.* This large advance is naturally tempting to many of the speculators, and consequently prices have been somewhat irregular on occasional realisations. The trade is too big, we should think, to allow an absolute corner, but the "ring" seems to be very powerful, and we cannot but expect that a good price will be maintained through the winter.



Smith Again.—Seeing the label of "Smith's Sedative Drops, commonly known as Laudanum," in our last, another correspondent sends us a pill box label, which runs thus:—"Smith's Sedative Pill Mass, commonly known as Opium. Sold in 7½*d.* and 1*s.* 1½*d.* boxes." The same wholesale agents are named on the label as in the case of the sedative drops.

R. P. L.—1. If you had read our last two numbers you need not have asked us about the strength of tinct. phosphorus ϕ . The new Pharmacopœia expressly states there is no such preparation. Phosphorus itself is ϕ ; a saturated solution of this in absolute alcohol (which will dissolve 1 part in 1,000) is designated tinct. phos. 3*x*. That is the same preparation which has been commonly known as tinct. phosphorus ϕ . 2. We discussed the glycerine and lime juice question in our Notes and Queries last September, and again in January. 3. Syr. rhæados is generally a good colouring ingredient for mixtures.

Vaccinium Myrtillus.—Mr. T. B. Smith, Dulwich, writes:—"Will some correspondent kindly inform me of the properties of the bleaberry as regards intensity and description of colour and behaviour with reagents such as ammonia and iron salts? Have found a one per thousand solution of potassium permanganate useful for estimating colour of syrup of red poppy, when acidulated with sulphuric acid and diluted; e. g. 10 volumes of syr. rhæados required 17 volumes of the permanganate solution for complete decolorisation; no permanent tint of permanganate until more than thirty volumes had been added. The last result due to tannin or some alkaloid?"

Respecting Dr. Buchanan's University of Philadelphia, mentioned in our editorial columns last month, we have received a paper purporting to be a copy of a judgment in the Supreme Court of Pennsylvania, confirming the charter. We presume this is sent by Dr. Buchanan's agent. If this be the case there is still an opportunity for those who wish to get degrees without working for them. We still fail to see, however, why such persons should not assume the title they may care to have without adopting what seems to us the perfectly superfluous formality of paying Dr. Buchanan an enormous price for his elaborate parchment.

Chemicus.—You are not eligible for the Modified Examination: you must pass the Preliminary and Minor. If you do not find all the information you require in this journal, apply to the Registrar, 17 Bloomsbury Square, London.

Editor.—The examination questions are not published. Students get to know something about them by mutual information, or sometimes by making a "trial trip."

Service on Juries.—Mr. F. Andrews (Leinster Terrace, W.) sends us the following seasonable reminder:—Several pharmaceutical chemists have lately been summoned to serve on juries. Though legally exempt, they are not entitled to be excused from attendance unless their exemption has been claimed on or before the revision of the jury lists by the justices in Petty Sessions. They should therefore examine the jury lists placed on the door of their church or chapel on the first three Sundays in the month of September; if they find their names inserted, they should at once write to the churchwardens and overseer, claiming their exemption, and should also attend the Petty Sessions.

G. H. P.—The preparation of which you send label is undoubtedly liable to medicine stamp duty. Read section on this in our Diary for 1876.

J. L. S.—PRESERVED GINGER is the young rhizomes kept in concentrated syrup. They are first scalded and scraped. Cooley says "a factitious preserved ginger is sometimes met with, prepared from the stalks of lettuce just going to seed, using a concentrated syrup strongly flavoured with Jamaica ginger."

Caution.—1. SPIRIT VARNISH:—

Guaiacum, 5 lbs.
Powdered glass (coarse), 3 lbs.
Rectified spirit, 65 o.p., 7 quarts.

Mix in a large clean tin, and well cork. Agitate continually for several hours, or until the grain is all dissolved. Then strain and add

Camphor, 2 ozs.
Canada balsam, 1 quart.

2. Perhaps you are thinking of the recent excise prosecution at Glasgow for the sale of a wine said to contain extract of meat. Quinine wine may only be sold without a sweets licence if it be made in accordance with the British Pharmacopœia. Or any proprietary quinine wine may be sold as a patent medicine, with the proper stamp attached.